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NWC TP 7019
Volume 2

(4)

**A Water Geochemistry Study of Indian Wells Valley,
Inyo and Kern Counties, California
Volume 2. Appendixes B Through G**

by
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and
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Geothermal Program Office
Public Works Department

SEPTEMBER 1989

NAVAL WEAPONS CENTER
CHINA LAKE, CA 93555-6001



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NAVAL WEAPONS CENTER

FOREWORD

This report documents a water geochemistry study performed to determine possible sources of leakage of geothermal waters into the Indian Wells Valley. The study reported on here was funded by a grant from the Eastern Kern County Resource Conservation District. This document is being published as a technical report by the Geothermal Program Office to make the information part of the permanent record of the Department of Defense. Any reference to company or product names does not constitute endorsement by the U.S. Navy or by the University of Utah.

The report is being published in two volumes; Volume 1 contains the main body of the report and Appendix A, Volume 2 contains Appendixes B through G. Volume 2 will be distributed separately to recipients of Volume 1 who request the second volume.

This report was reviewed for technical accuracy by Carl F. Austin, Richard Dodge, and James Moore.

Approved by
K. C. KELLEY
Public Works Officer
30 August 1989

Under authority of
D. W. COOK
Capt., U.S. Navy
Commander

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12a. DISTRIBUTION/AVAILABILITY STATEMENT A Statement; approved for public release; distribution is unlimited			12b. DISTRIBUTION CODE
13. ABSTRACT (Maximum 200 words) (U) The geochemistry of groundwater in Indian Wells Valley (IWV) was studied using water analyses available from the U. S. Geological Survey supplemented by samples taken by the University of Utah and the Naval Weapons Center (NWC). The geochemical findings reveal possible sources of leakage of geothermal waters into the IWV. (U) In the IWV and related areas, of 254 water types possible, some 55 are present. By grouping similar types of water together, eight major water types were mapped: 1. Alpine waters (calcium-sodium-magnesium-bicarbonate type) 2. Sodium-chloride waters 3. Sodium-carbonate waters 4. Sodium-bicarbonate waters 5. Sodium-bicarbonate-chloride waters 6. Sulfate waters 7. Red Hill/Little Lake/Lumber Mill Waters (calcium-(sodium-magnesium)-bicarbonate-chloride-(sulfate)) waters 8. The waters of the well fields (usually sodium-calcium, but sometimes calcium-sodium-bicarbonate-chloride) (U) Geothermal leakage into IWV occurs from Coso, areas west and just north and south of the main gate of NWC, the southwestern part of the IWV, and Haystack Peak in the Spangler Hills. (Contd. on back)			
14. SUBJECT TERMS Geochemistry Aquifer Groundwater Geothermal Geothermometry			15. NUMBER OF PAGES 255 16. PRICE CODE
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19. (Contd.)

(U) Thrust faulting and associated listric, landslide, and relaxation faulting in the Sierra, the Coso and Argus Ranges, and under the IWV provide other avenues for subsurface inflow. Data indicate significant inflow into the IWV from Rose Valley. Inflow from the Sierran granitics is indicated by the Tungsten Peak Mine, which produced 180 acre-feet of water per year when in operation. Besides evaporation from China Lake Playa and transpiration by plants, other possible losses from the IWV are subsurface outflow to Searles Valley through Salt Wells and Poison Canyon, interbasin flow to Searles Valley beneath the Argus Range, and interbasin flow south towards Koehn Lake.

(U) With the exception of a few wells in the Ridgecrest field, water quality has changed little with time. Water quality may improve, deteriorate, or remain constant with depth, depending on well location.

(U) The geochemical data of this report, when integrated with the structural and other data, may point to additional critical sites that should be sampled.

Appendix B

CONDUCTIVITY VERSUS TOTAL DISSOLVED
SOLIDS CURVES

Accession For	
NTIS GRA&I	<input checked="" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By	
Distribution/	
Availability Codes	
Dist	Avail and/or Special
A-1	

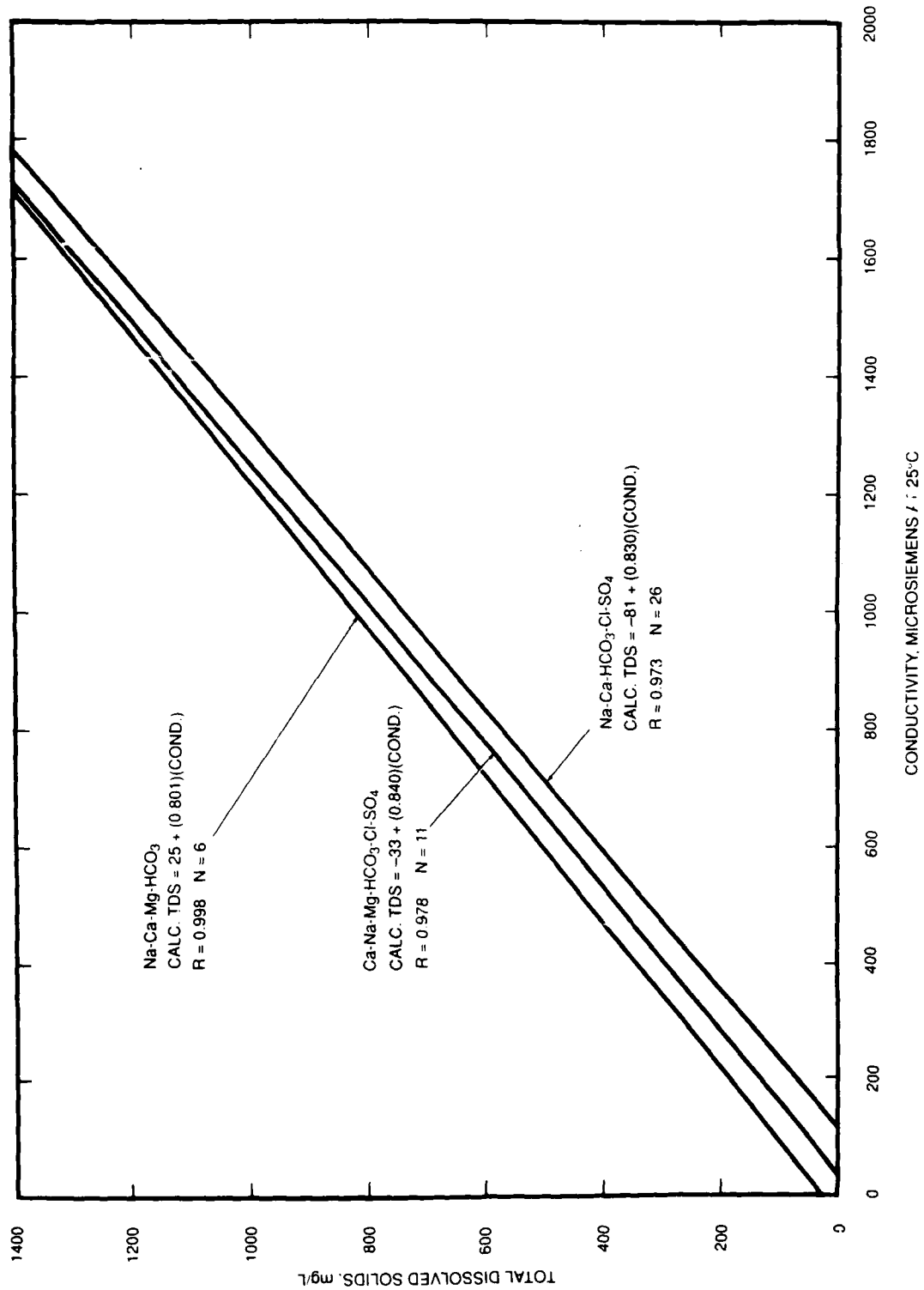


FIGURE B-1. TDS Curves Number 1.

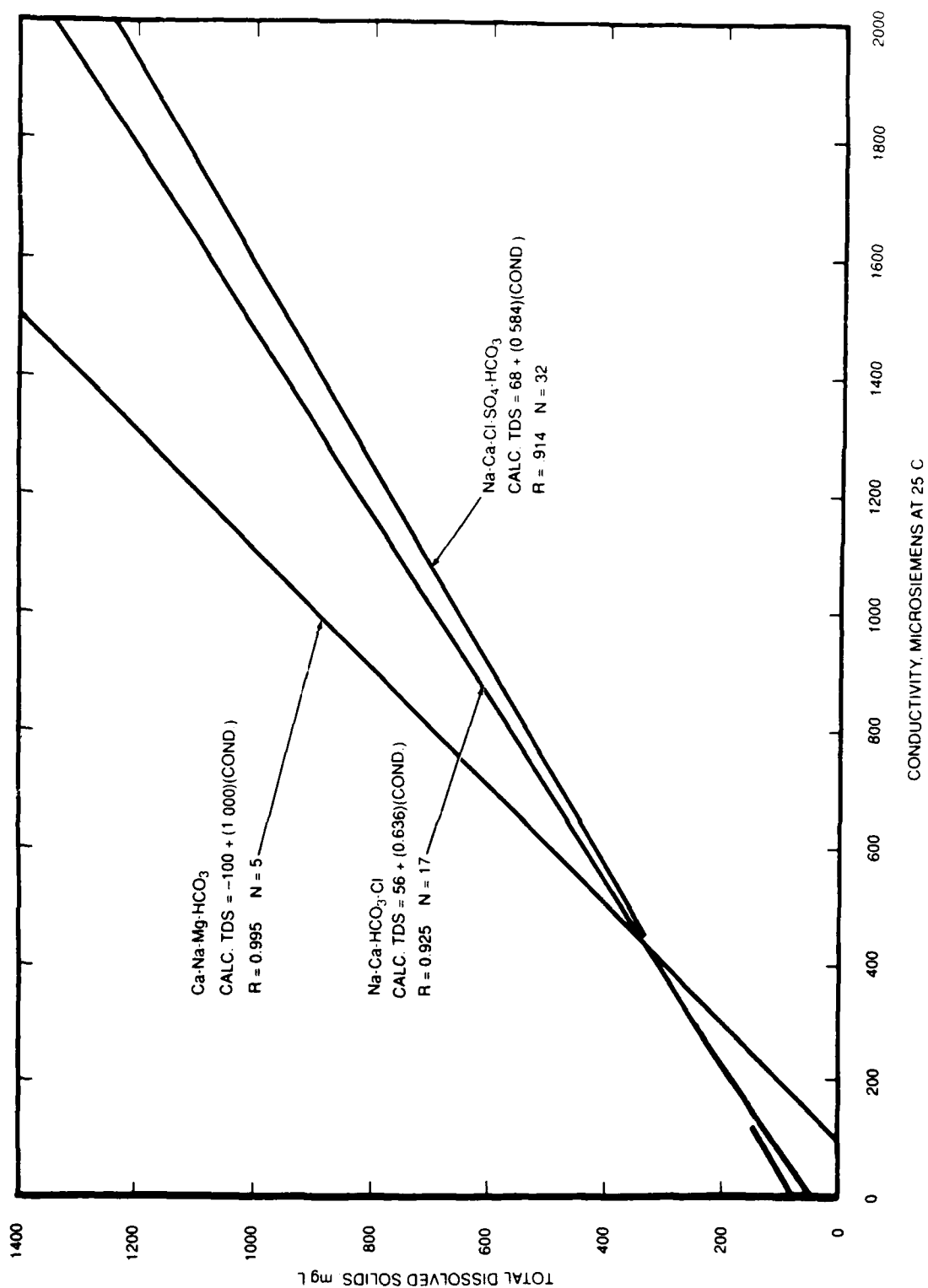


FIGURE B-2. TDS Curves Number 2.

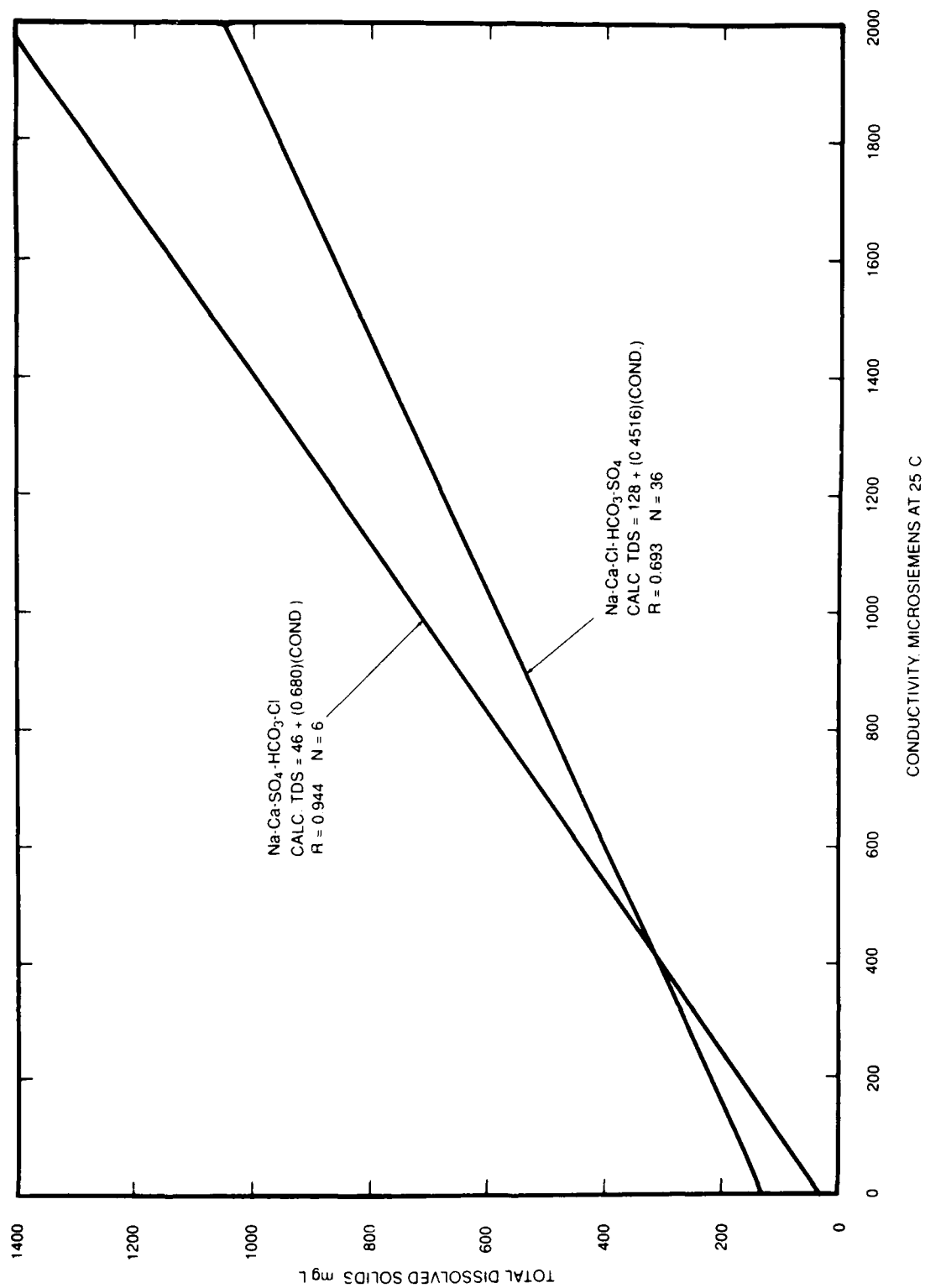


FIGURE B-3. TDS Curves Number 3.

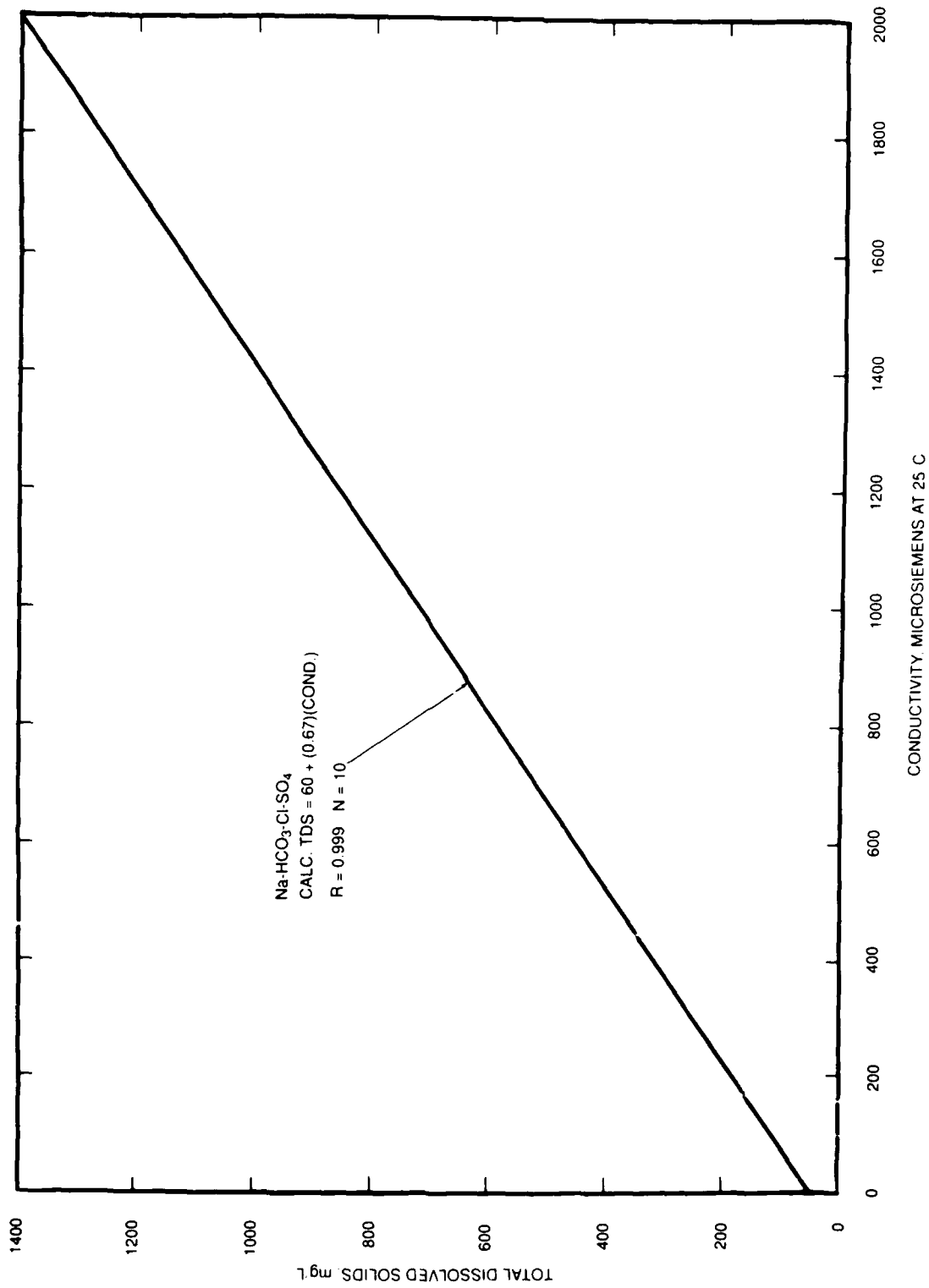


FIGURE B-4. TDS Curves Number 4.

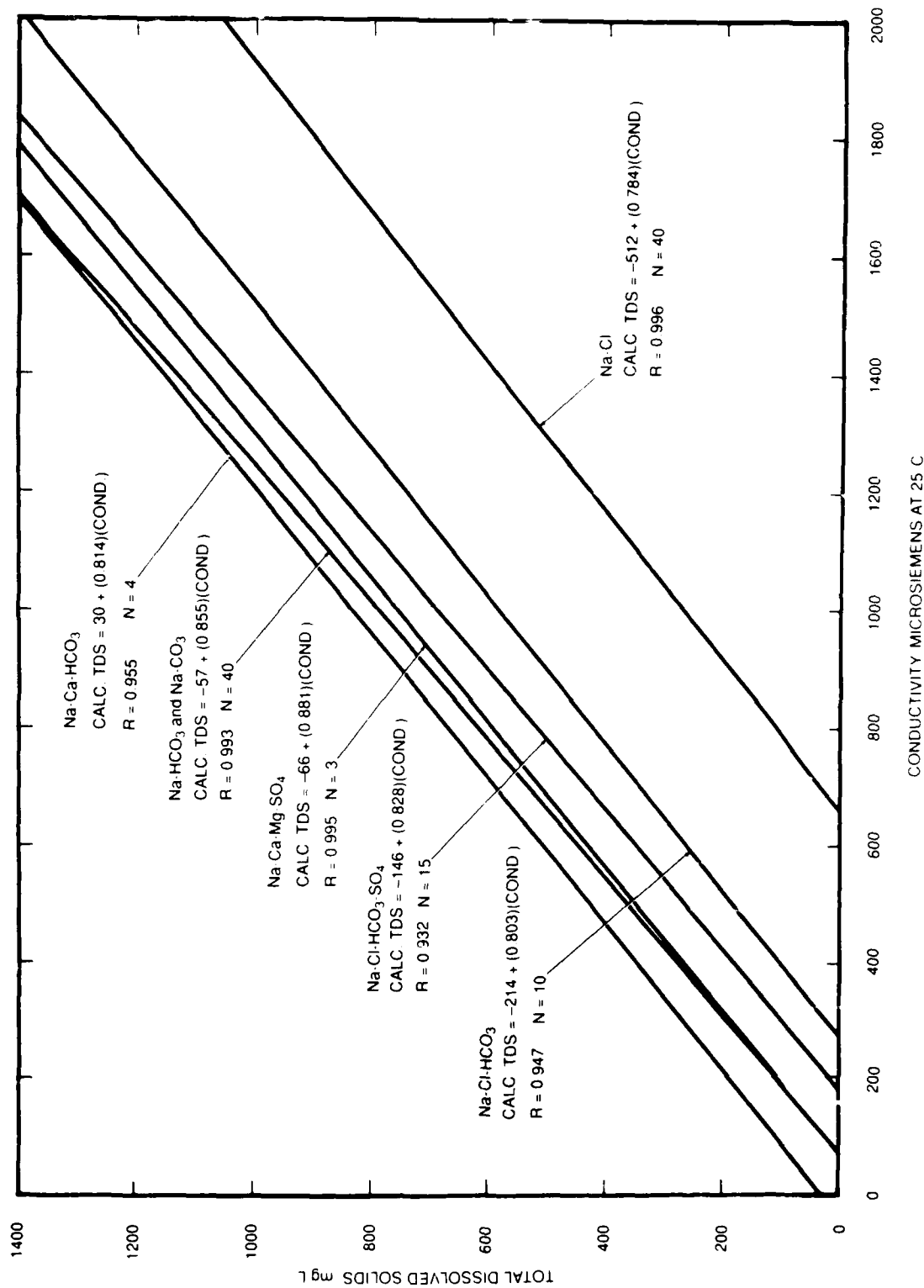


FIGURE B-5. TDS Curves Number 5.

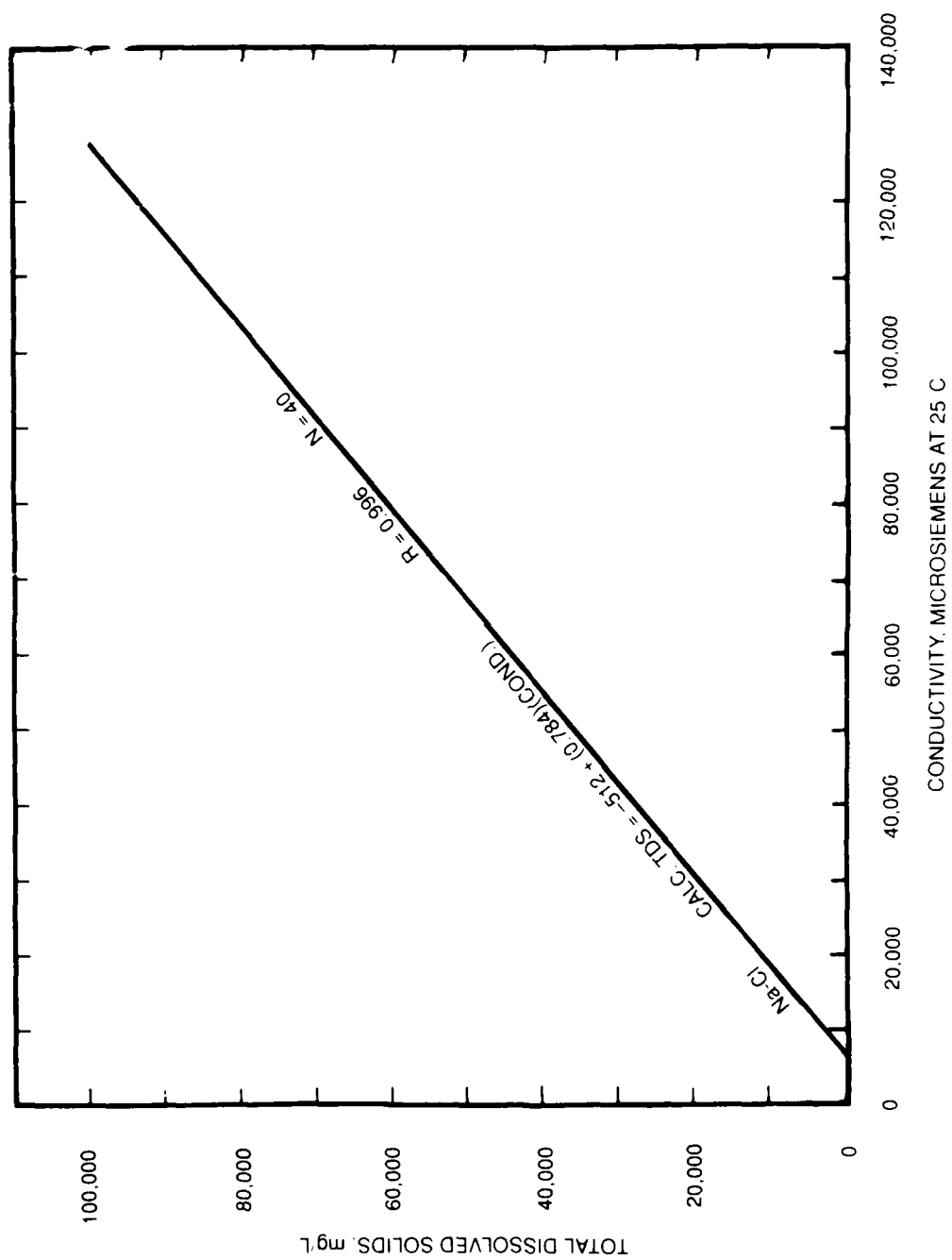


FIGURE B-6. TDS Curves Number 6.

Appendix C

WATER CHEMISTRY TERRAIN TRIANGULAR PLOTS

In this appendix, the numbering system for each sample site is as follows. The first digit of the sample number is the second digit of the township number (T21S through T27S), thus 1 through 7. The second number is the last digit of the range number (R37E through R43E), thus 7, 8, 9, 0, 1, 2, or 3. The third and fourth digits are the section number. The letter represents the 16th of the section. The final digit is the number of the well in that section.

The abbreviation Alk is used to designate alkalinity in this appendix.

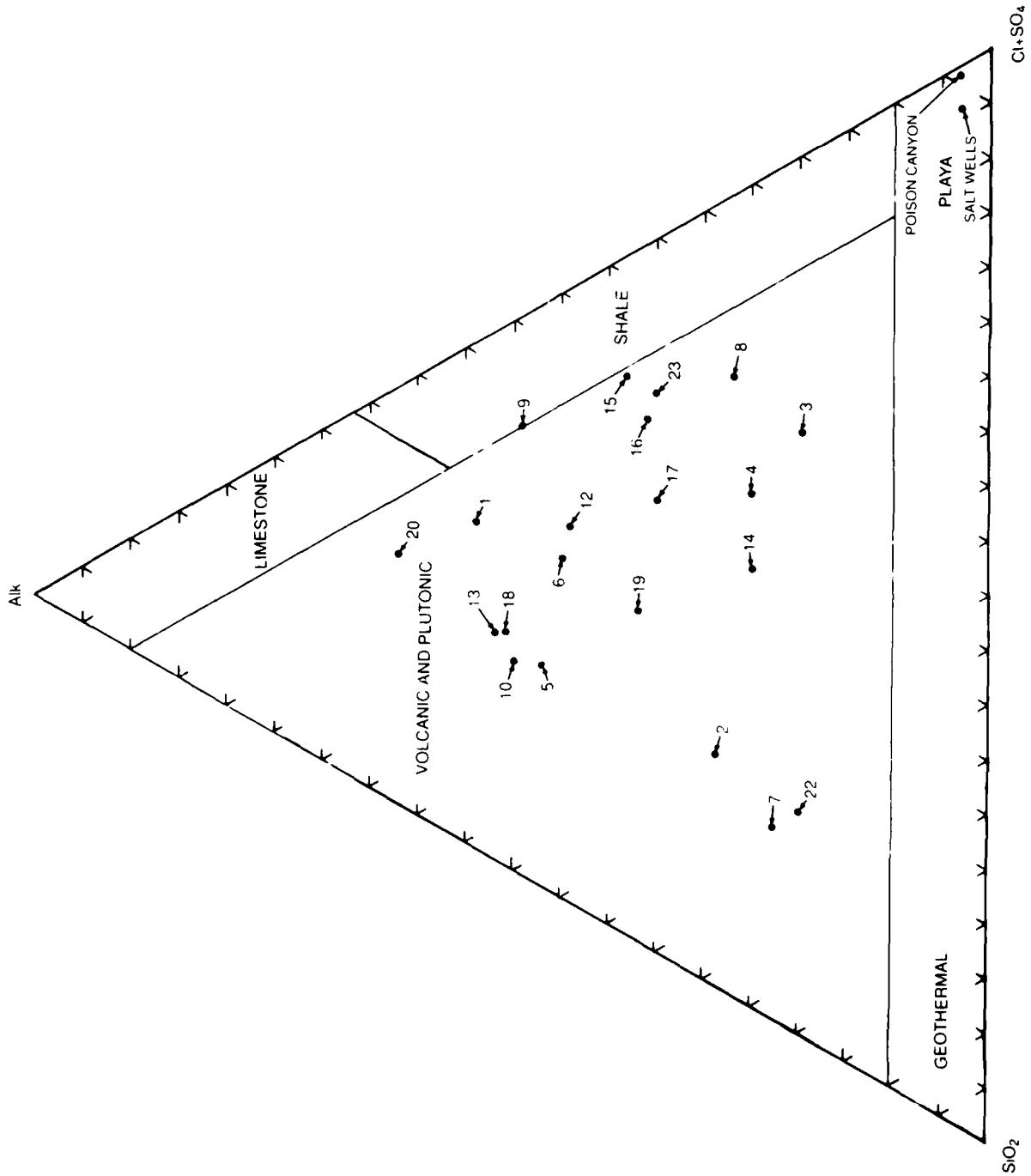


FIGURE C-1. Samples From EKRCD: Alk, SiO₂, and Cl + SO₄.

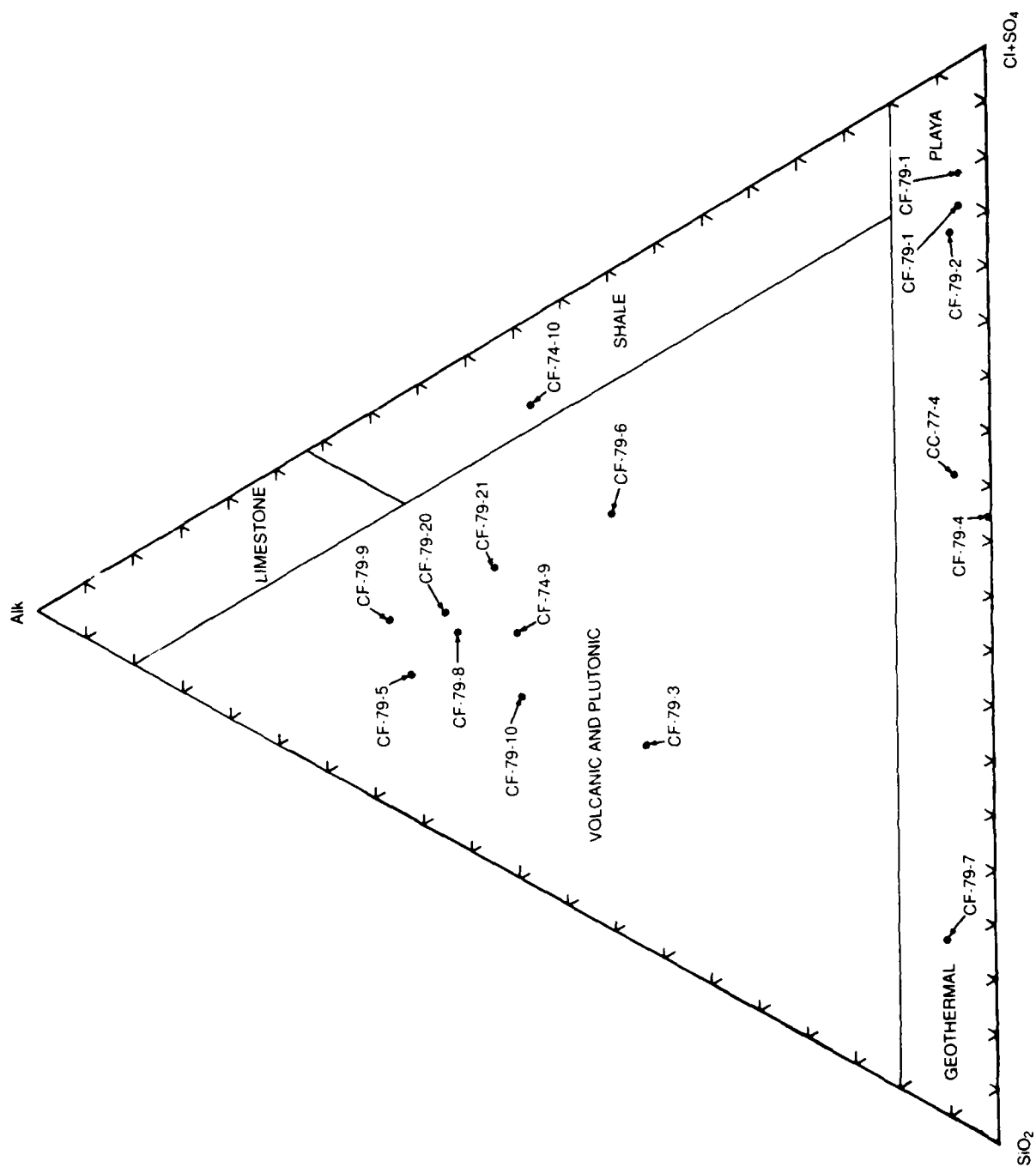


FIGURE C-2. Samples from Fournier and Thompson (1980): Alk^+ , SiO_2 , and $\text{Cl} + \text{SO}_4$.

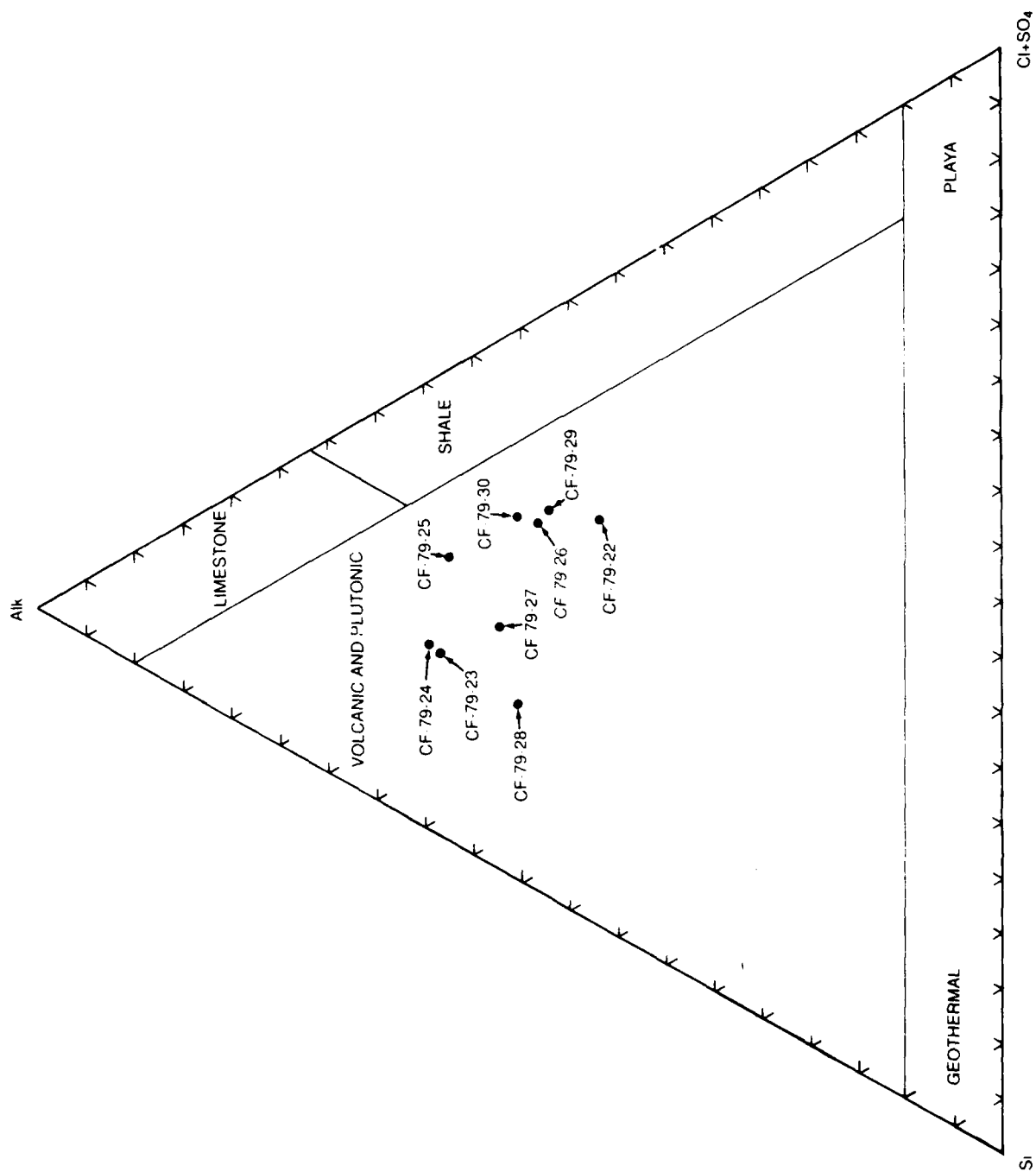


FIGURE C-3. Samples From Fournier and Thompson (1980): Alk, Si, and Cl + SO₄.

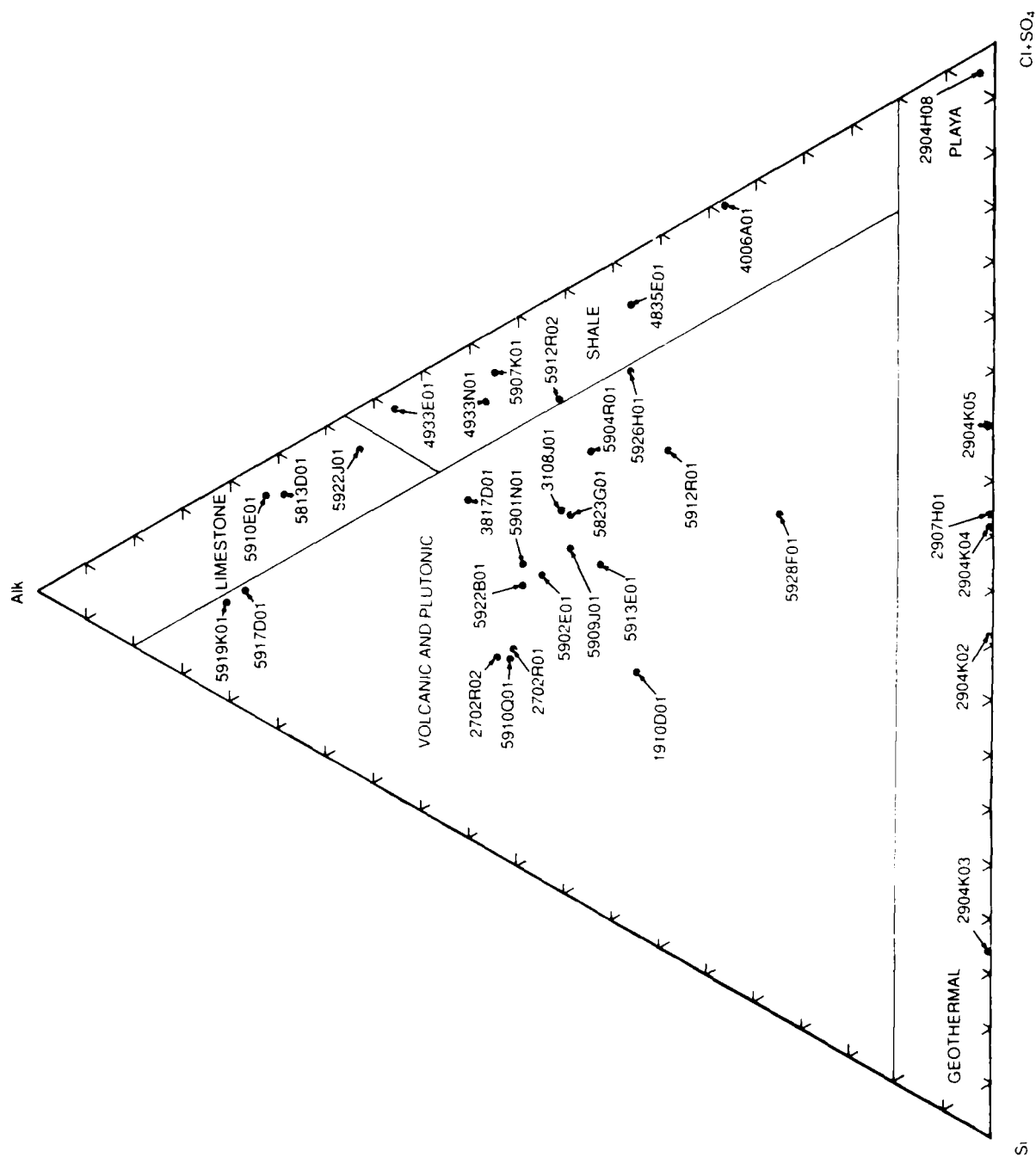


FIGURE C-4. Samples From USGS: Alk, Si, and Cl + SO₄, Graph Number 1.

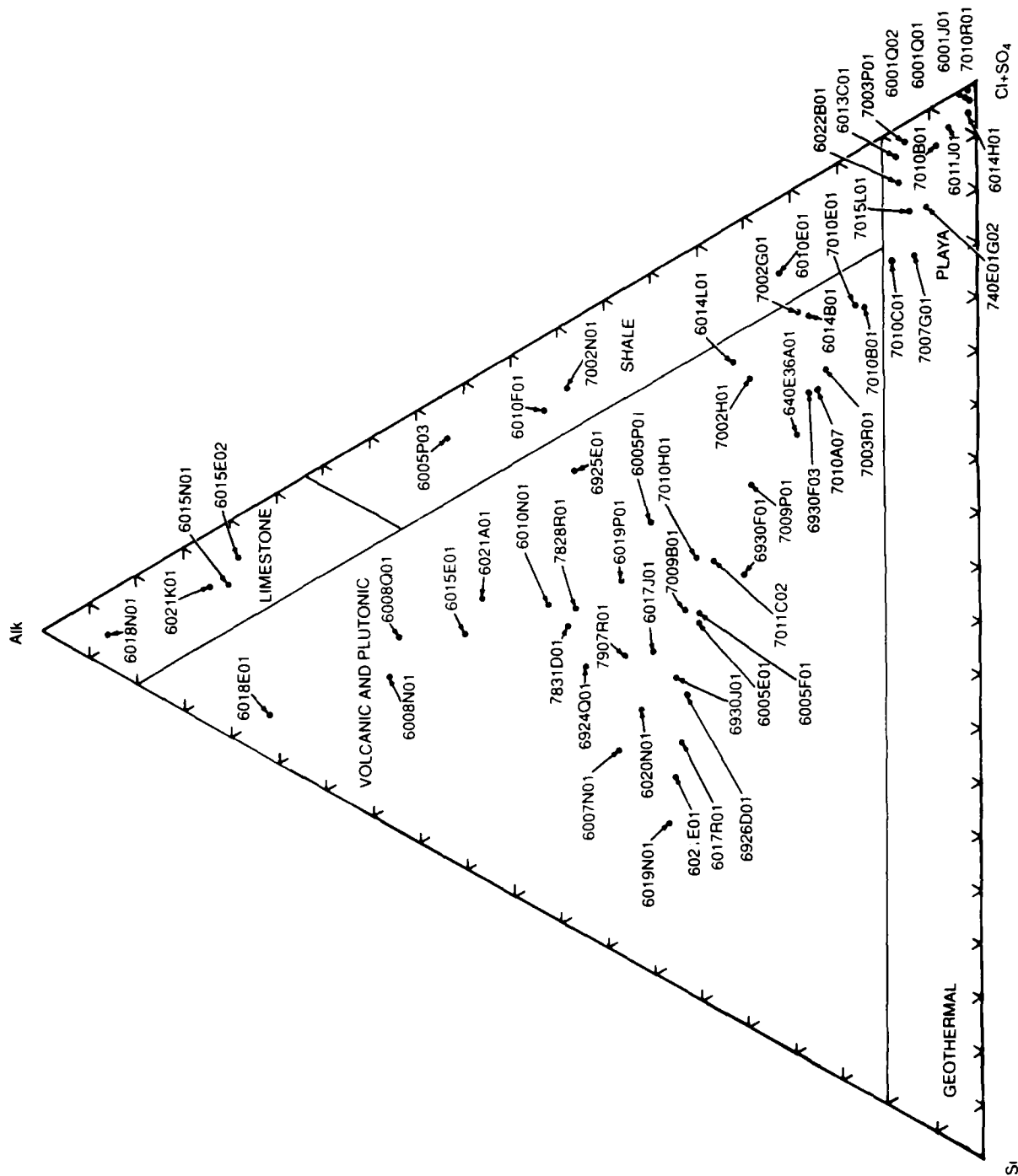


FIGURE C-5. Samples From USGS: Alk, Si, and Cl + SO₄, Graph Number 2.

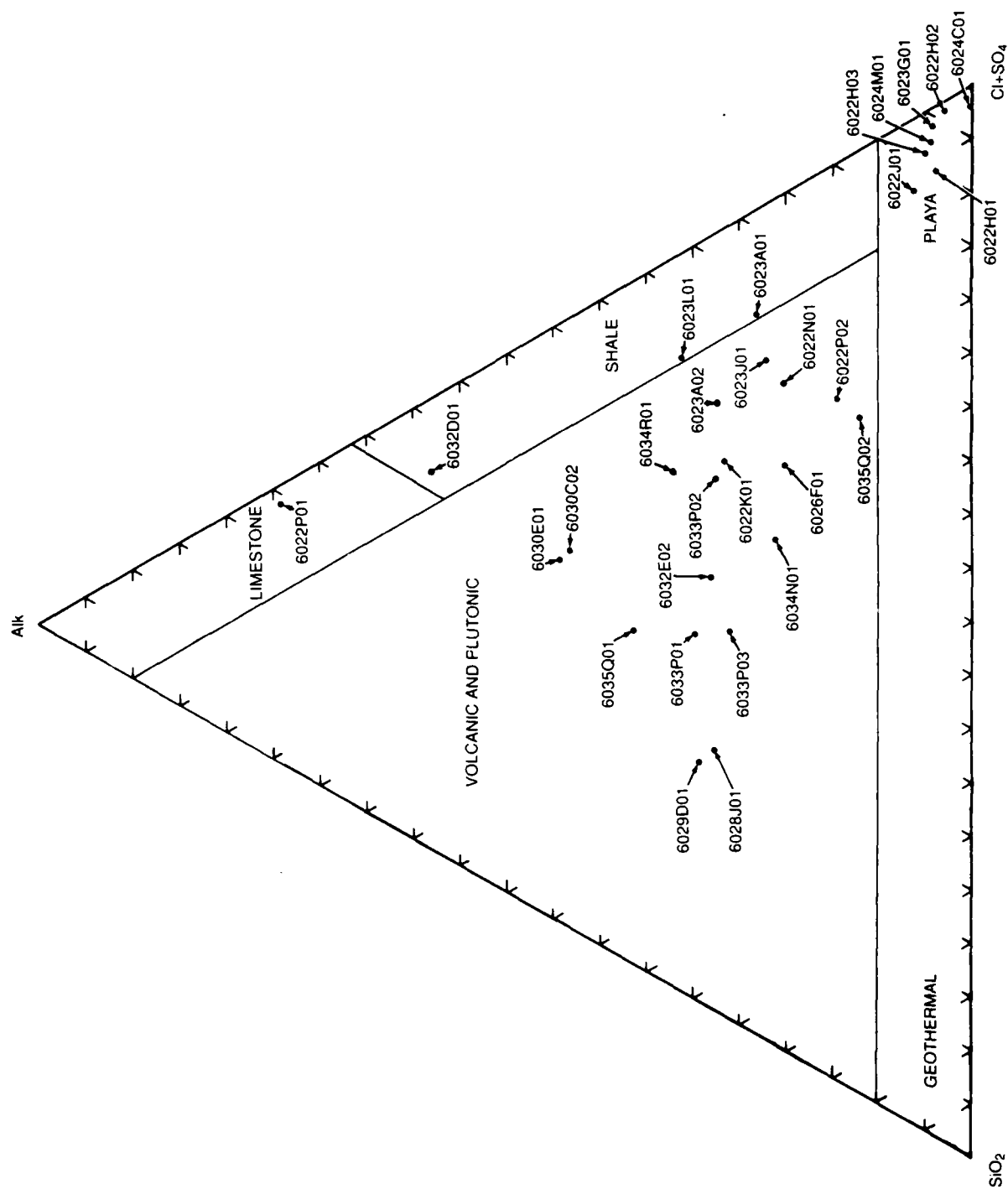


FIGURE C-6. Samples From USGS: Alk, SiO₂, and Cl + SO₄.

Appendix D

**TRIANGULAR PLOTS SHOWING
CARBONATE-SULFATE AFFINITIES**

In this appendix, the numbering system for each sample site is as follows. The first digit of the sample number is the second digit of the township number (T21S through T27S), thus 1 through 7. The second number is the last digit of the range number (R37E through R43E), thus 7, 8, 9, 0, 1, 2, or 3. The third and fourth digits are the section number. The letter represents the 16th of the section. The final digit is the number of the well in that section.

The abbreviation Alk is used to designate alkalinity in this appendix.

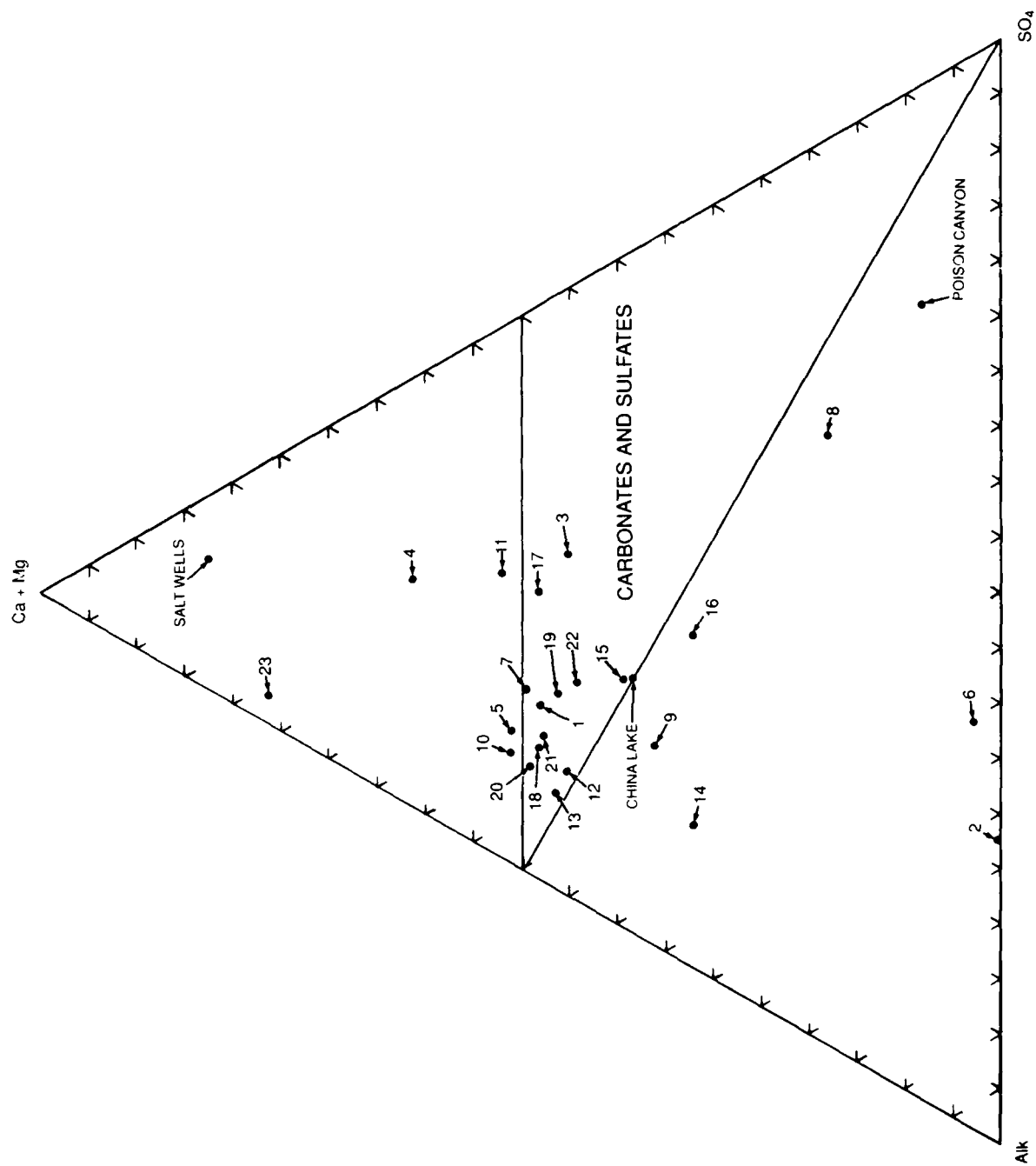


FIGURE D-1. Samples From EKCRCD: Ca + Mg, Alk, : nd SO₄.

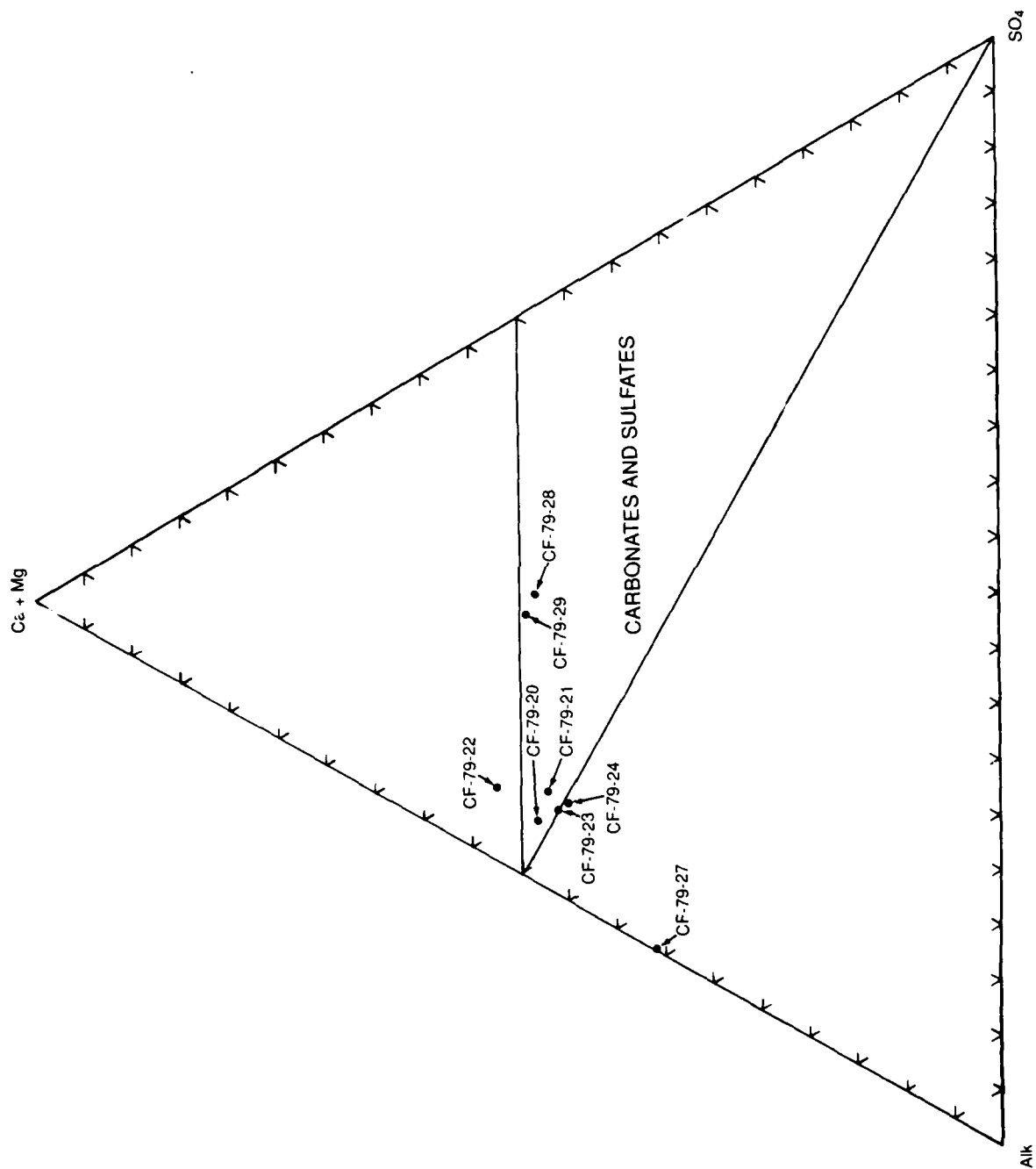


FIGURE D-2. Samples from Fournier and Thompson (1980): Ca + Mg, Alk, and SO₄.

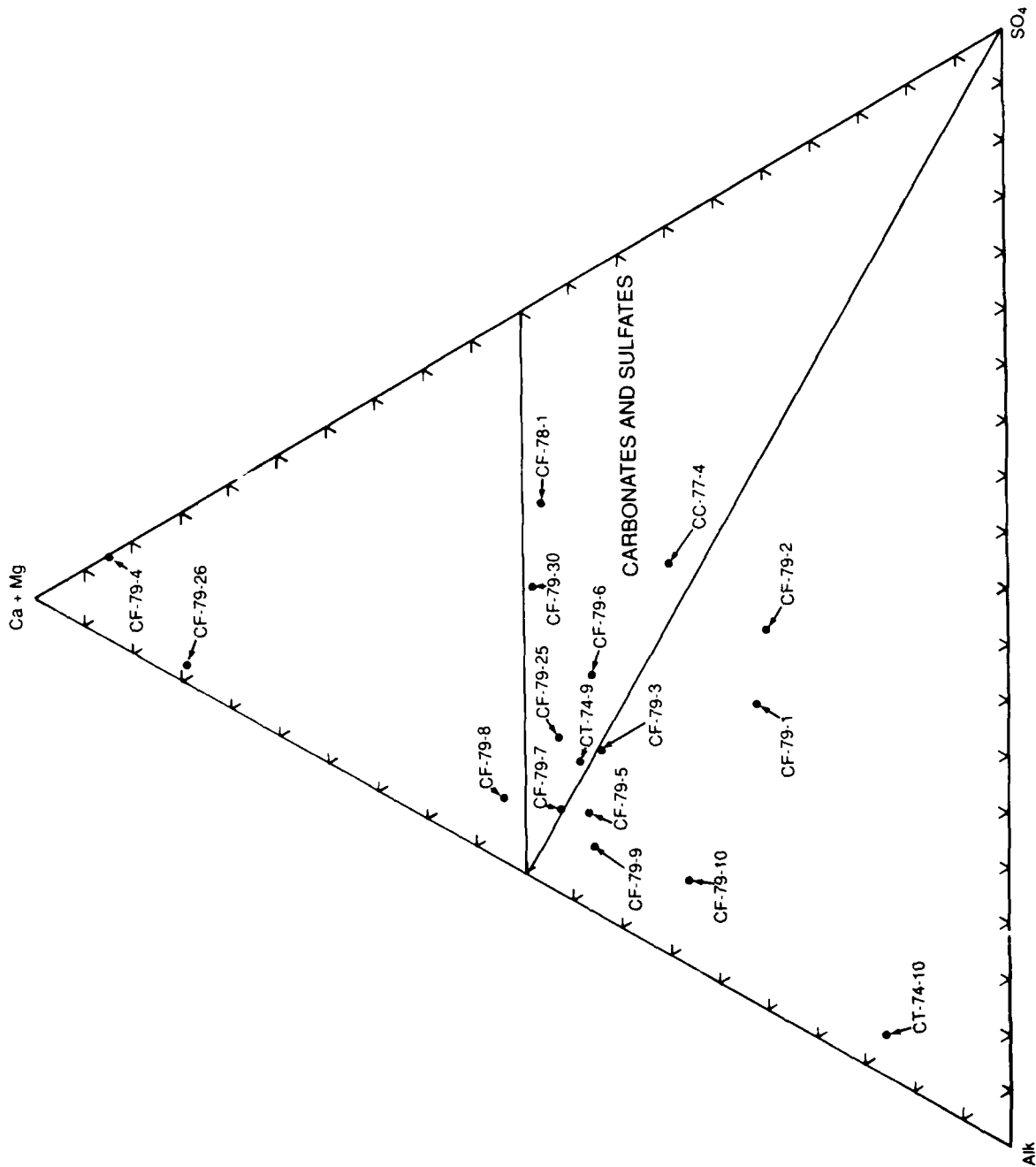


FIGURE D-3. Samples From Fournier and Thompson (1980): Ca + Mg, Alk, and SO₄.

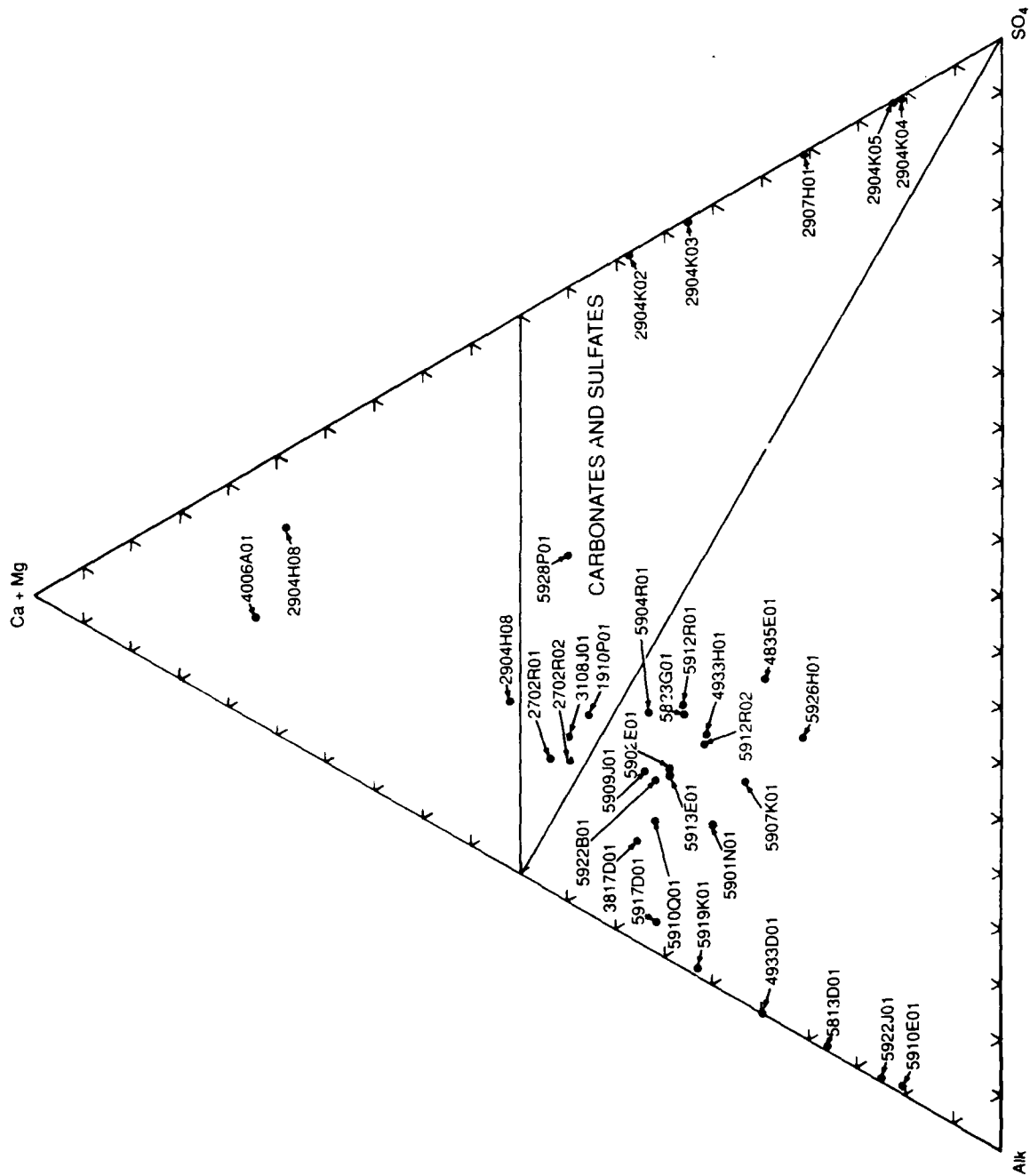


FIGURE D-4. Samples From USGS: Ca + Mg, Alk, and SO4, Graph Number 1.

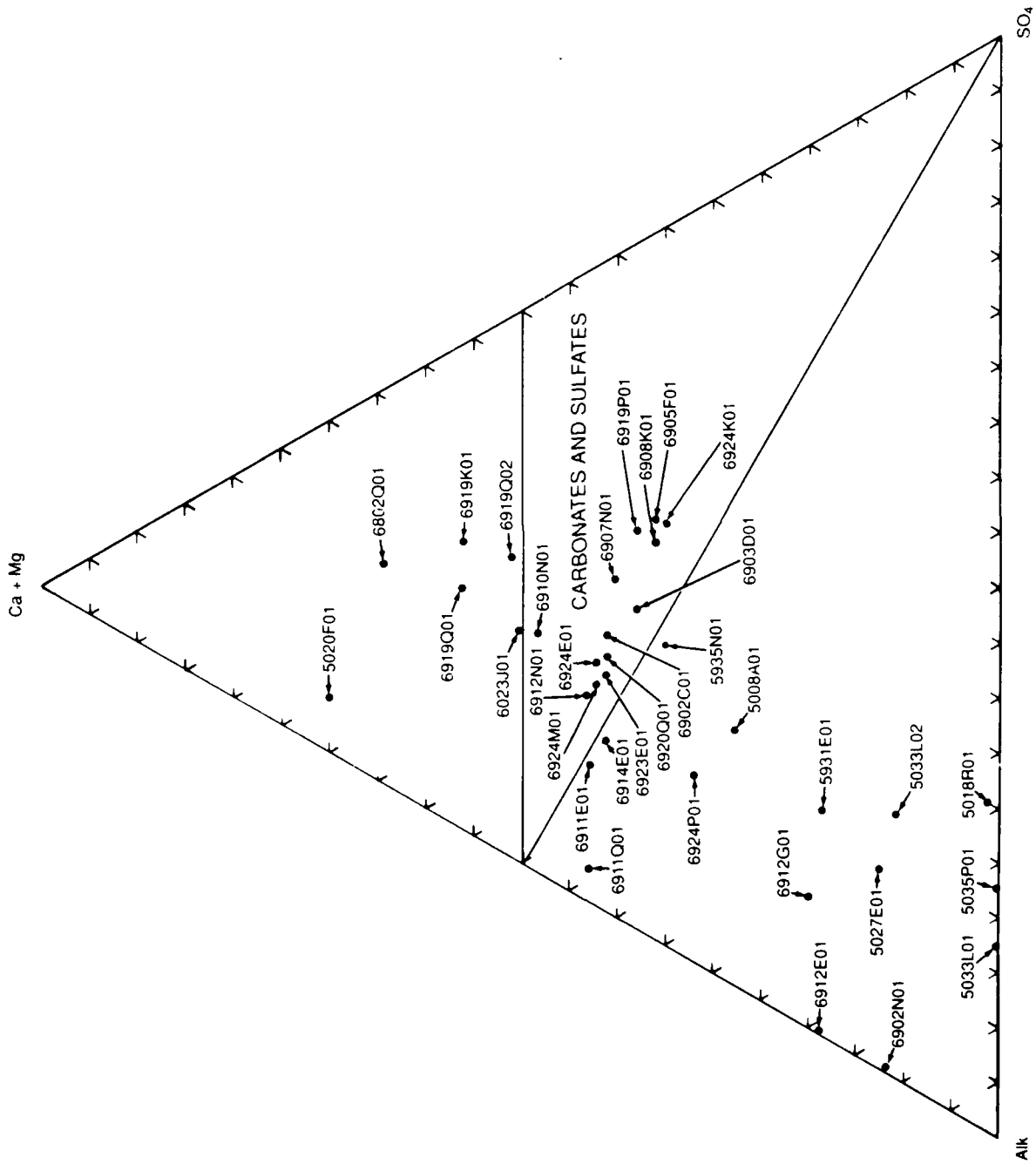


FIGURE D-5. Samples From USGS: Ca + Mg, Alk, and SO₄, Graph Number 2.

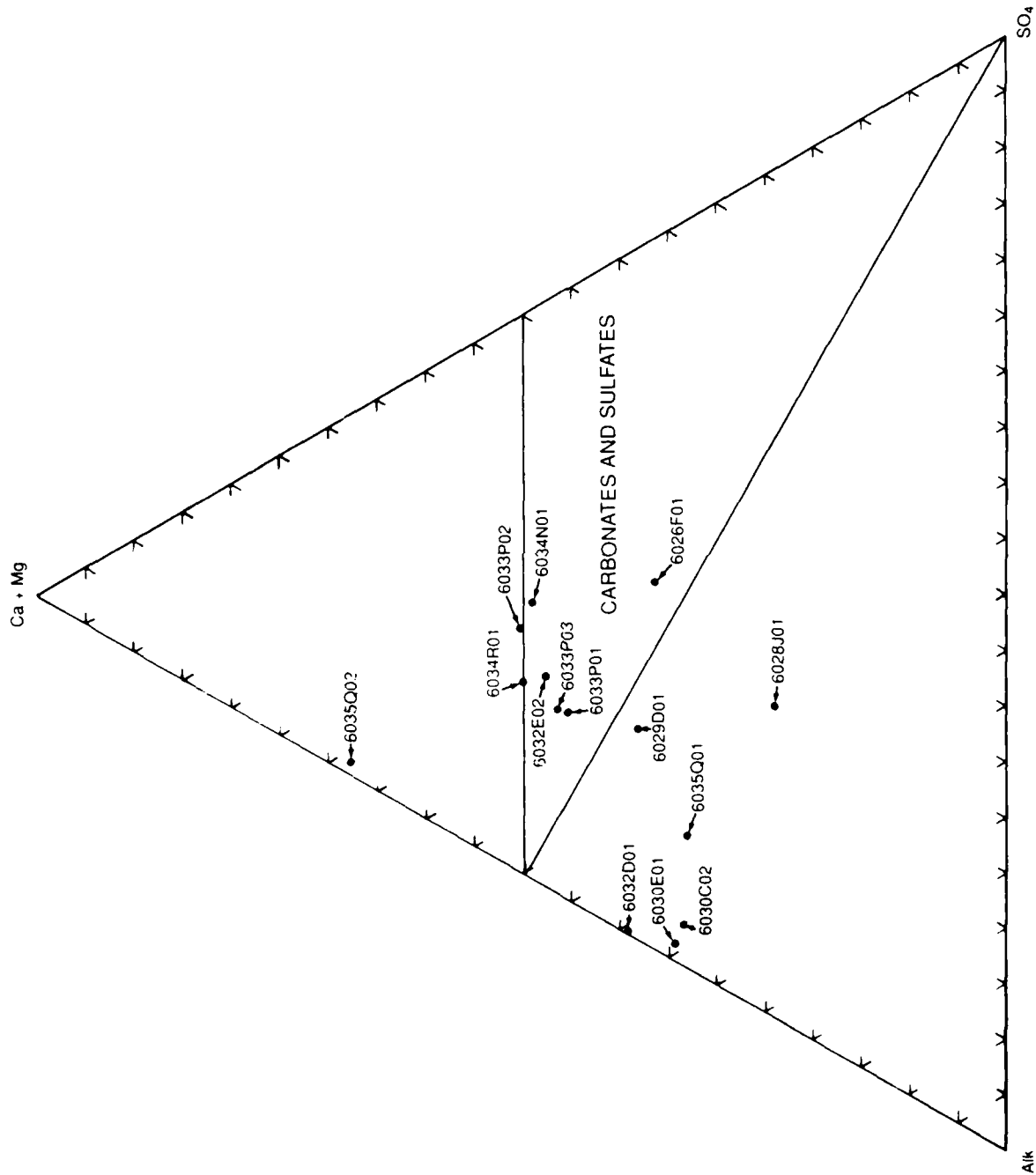


FIGURE D-6. Samples From USGS: Ca + Mg, Alk, and SO₄, Graph Number 3.

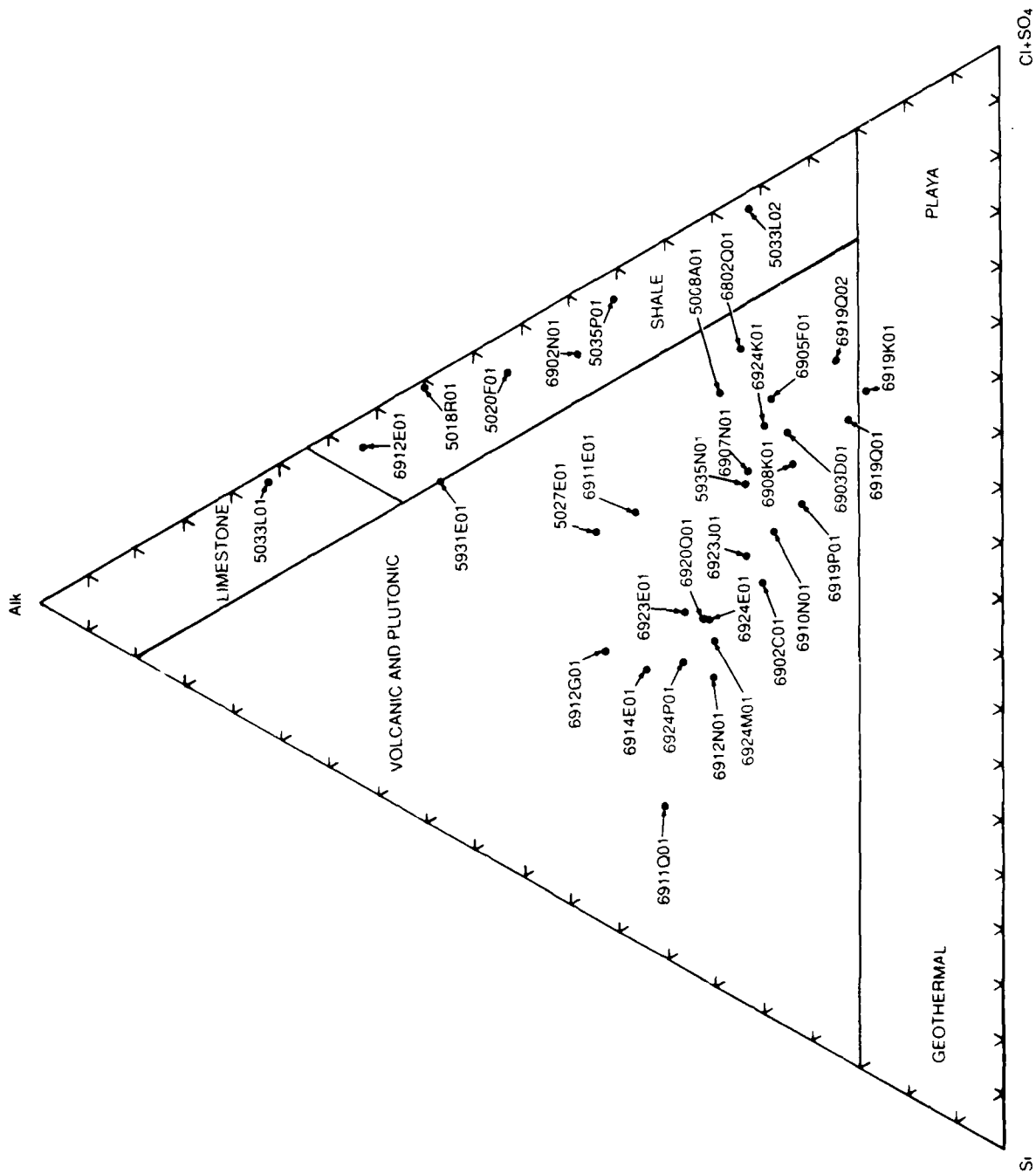


FIGURE D-7. Samples From USGS: Alk, Si, and Cl + SO₄.

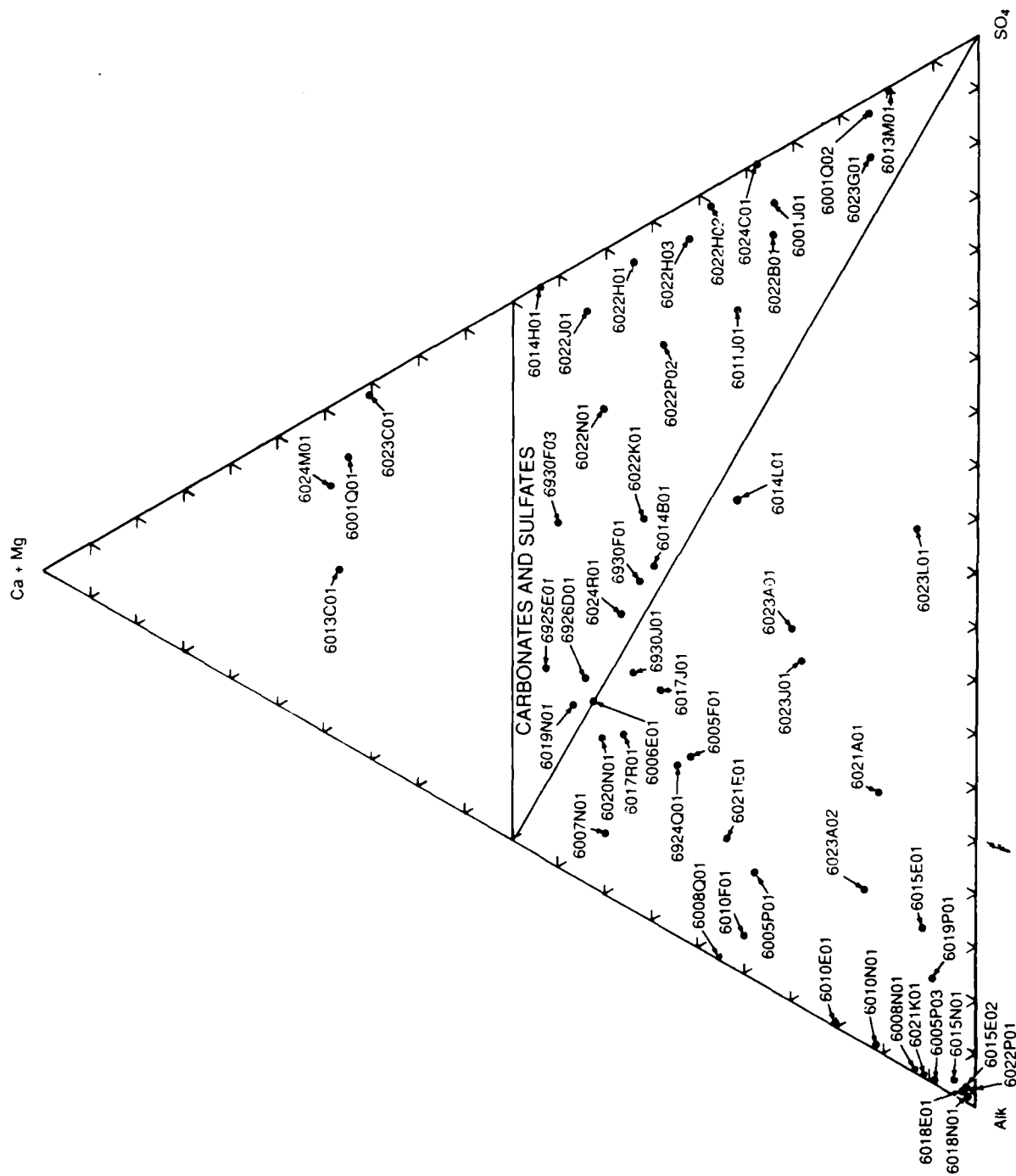


FIGURE D-8. Samples From USGS: Ca + Mg, Alk, and SO₄, Graph Number 1.

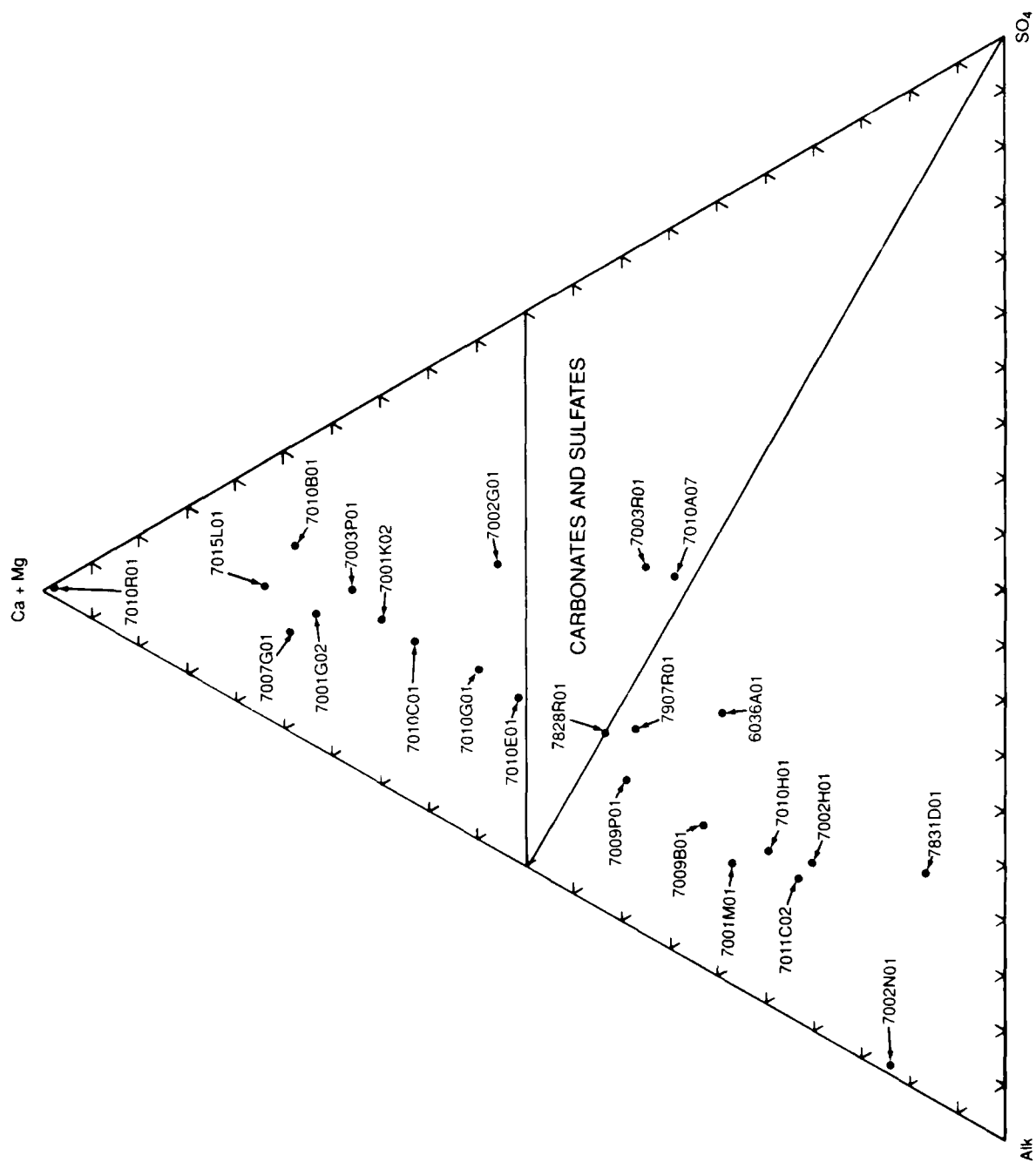


FIGURE D-9. Samples From USGS: Ca + Mg, Alk, and SO₄, Graph Number 2.

Appendix E

**SAMPLING DATA, ANALYSES, AND STIFF DIAGRAMS DONE
SPECIFICALLY FOR THIS STUDY**

The data in this appendix were gathered specifically for this study.

WATER-QUALITY FIELD REPORT

Y M D
Date 860916 Time 0855 Station ----- Project No. IWV

Station Name: IWV-1 (Grumpy Bear Well) (GB)

Collected by: R. Baskin & D. Turner

Schedules: Schedule Nos. -----

Unique Nos. -----

Lab Codes -----

Collection period: Monthly, Quarterly, Semiannually, Other

Collection point: At well

EWI, EDI, grab sample; If grab sample, explain: -----

No. of verticals -----, width of verticals -----, type of sampler -----

Field measurements

Discharge (meas. No. -----, rating, est.) Mean G. H. ----- cfs

Air temperature ----- °C

Water temperature 12 °C

Sp. Conductance (Meter type and No. Labline) 830 Micromhos
calculations - if necessary - on back at 25°C

pH (Meter type and No. Beckman pH 21 % slope adj. -----) 7.49 units

Dissolved oxygen (Meter type and No. -----) ----- mg/L

Barometric pressure ----- mm/Hg

Calibration value ----- mg/L

Total coliform ----- colonies

Fecal coliform ----- /100 mL

Fecal streptococci ----- colonies

Alkalinity: Carbonate ----- /100 mL

Bicarbonate ----- mg/L

Observations and remarks Well in fractured Granite Depth
250'-300'

Client : Mr. R. Baskin
Address : P.O. Box 81164
 Salt Lake City, UT 84108

Attn. :
P.O. No.:

Sample ID: IWU-1 (GB) Grumpy Bear Well
Sample Date Time: 09/16/86 08:55

Lab No.: 86-WI/05135
Date Received: 09/29/86

Parameters

Alkalinity as CaCO3	290.	mg/l
Bicarbonate as CaCO3	290.	mg/l
Boron, dissolved	.05	mg/l
Calcium, dissolved	82.	mg/l
Carbonate as CaCO3	0.	mg/l
Chloride	19.	mg/l
Fluoride	.60	mg/l
Hardness as CaCO3	312.	mg/l
Magnesium, dissolved	26.	mg/l
pH (lab)	8.2	units
Potassium, dissolved	6.	mg/l
SAR in water	1.30	
Silica, dissolved	21.5	mg/l
Sodium, dissolved	52.	mg/l
Sulfate	99.	mg/l
Cations (sum)	8.68	meq/l
Anions (sum)	8.41	meq/l
Cation-Anion Balance	1.58	%
Solids, total dissolved	436.	mg/l
Arsenic, dissolved	.001	mg/l
Iron, dissolved	.03	mg/l
Conductivity (Field)	830.	umhos/cm
pH (Field)	7.49	units
Temperature (Field)	12.	

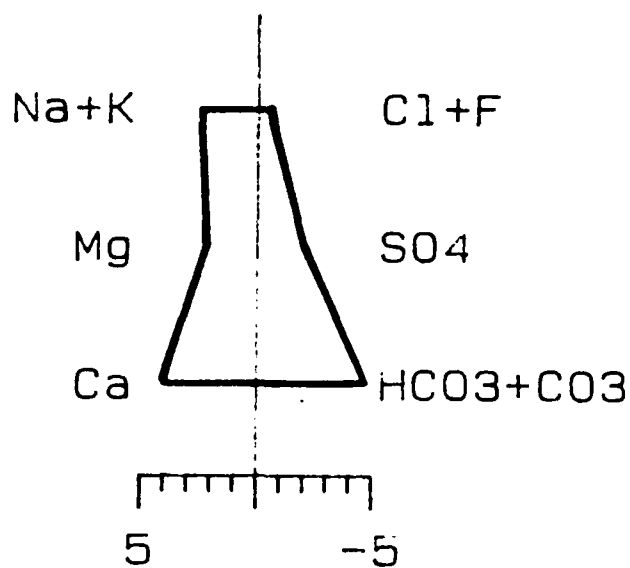
Remarks:

Note: Negative sign "-" denotes that the value is less than "<".

Ralph U. Poulsen, Laboratory Director

Ralph V. Poulsen

(44)



IWV1 GRUMPY BEAR WELL 09-16-86

WATER-QUALITY FIELD REPORT

Y M D
Date 860916 Time 1555 Station ----- Project No. IWV

Station Name: IWV-2 275/38E-31D

Collected by: R Baskin & D. Turner

Schedules: Schedule Nos. -----

Unique Nos. -----

Lab Codes -----

Collection period: Monthly, Quarterly, Semiannually, Other

Collection point: From Holding Tank

EWI, EDI, grab sample; If grab sample, explain: -----

No. of verticals -----, width of verticals -----, type of sampler -----

Field measurements

Discharge (meas. No. -----, rating, est.) Mean G. H. ----- cfs

Air temperature ----- °C

Water temperature 23 °C

Sp. Conductance (Meter type and No. -----) ----- Micromhos
calculations - if necessary - on back at 25°C

pH (Meter type and No. Beckman pH 21 % slope adj. -----) 8.76 units

Dissolved oxygen (Meter type and No. -----) ----- mg/L

Barometric pressure ----- mm/Hg

Calibration value ----- mg/L

Total coliform ----- colonies

Fecal coliform ----- colonies

Fecal streptococci ----- colonies

Alkalinity: Carbonate ----- mg/L

Bicarbonate ----- mg/L

Observations and remarks Water from holding tank No way
to get water directly from well

Client : Mr. R. Baskin
Address : P.O. Box 81164
Salt Lake City, UT 84108
Attn. :
P.O. No.:

Sample ID: IWU-2 275/38E-31D
Sample Date Time: 09/16/86 15:55

Lab No.: 86-WI/05136
Date Received: 09/29/86

Parameters

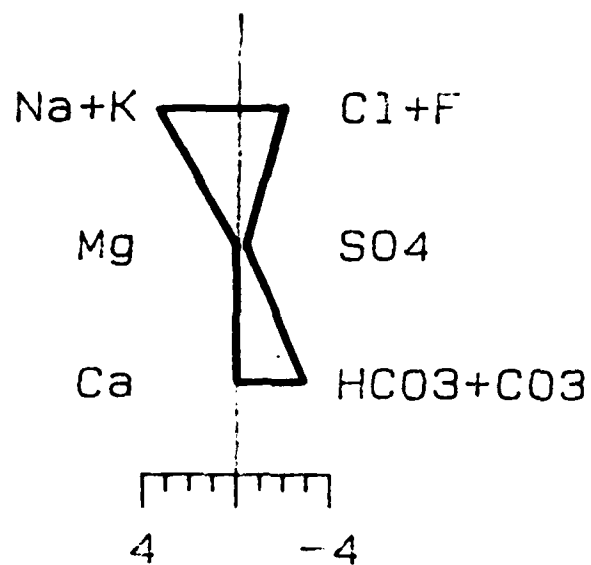
Alkalinity as CaCO ₃	116.	mg/l
Bicarbonate as CaCO ₃	56.	mg/l
Boron, dissolved	.28	mg/l
Calcium, dissolved	-1.	mg/l
Carbonate as CaCO ₃	60.	mg/l
Chloride	10.	mg/l
Fluoride	4.6	mg/l
Hardness as CaCO ₃	-7.	mg/l
Magnesium, dissolved	-1.	mg/l
pH (lab)	9.6	units
Potassium, dissolved	-1.	mg/l
SAR in water	14.31	
Silica, dissolved	24.4	mg/l
Sodium, dissolved	79.	mg/l
Sulfate	16.	mg/l
Cations (sum)	3.32	meq/l
Anions (sum)	3.18	meq/l
Cation-Anion Balance	2.15	%
Solids, total dissolved	196.	mg/l
Arsenic, dissolved	.016	mg/l
Iron, dissolved	.07	mg/l
pH (Field)	8.96	units
Temperature (Field)	23.	

Remarks:

Note: Negative sign "-" denotes that the value is less than "<".

Ralph U. Poulsen, Laboratory Director

Ralph V. Poulsen



IWV-2 27S/38E-31L

09-16-86 15

Client : Mr. R. Baskin
Address : P.O. Box 81164
 Salt Lake City, UT 84108
Attn. :
P.O. No.:

Sample ID: IWU-3 265/39E-18D
Sample Date Time: 09/16/86 19:00

Lab No.: 86-WI/05137
Date Received: 09/29/86

Parameters

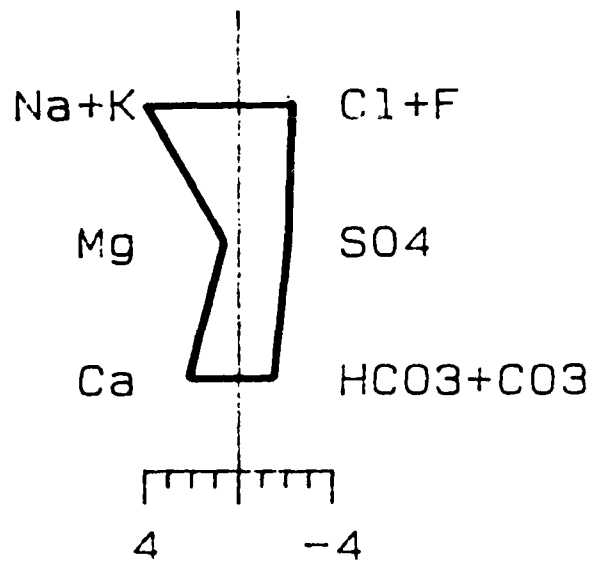
Alkalinity as CaCO3	90.	mg/l
Bicarbonate as CaCO3	90.	mg/l
Boron, dissolved	.50	mg/l
Calcium, dissolved	43.	mg/l
Carbonate as CaCO3	0.	mg/l
Chloride	80.	mg/l
Fluoride	.60	mg/l
Hardness as CaCO3	138.	mg/l
Magnesium, dissolved	7.	mg/l
pH (lab)	8.0	units
Potassium, dissolved	3.	mg/l
SAR in water	3.36	
Silica, dissolved	28.8	mg/l
Sodium, dissolved	89.	mg/l
Sulfate	101.	mg/l
Cations (sum)	6.72	meq/l
Anions (sum)	6.16	meq/l
Cation-Anion Balance	4.35	%
Solids, total dissolved	388.	mg/l
Arsenic, dissolved	-.001	mg/l
Iron, dissolved	-.02	mg/l
Conductivity (Field)	650.	umhos/cm
pH (Field)	7.78	units
Temperature (Field)	26.5	

Remarks:

Note: Negative sign "-" denotes that the value is less than "<".

Ralph U. Poulsen, Laboratory Director

Ralph V. Poulsen



IWV-3

265/39E-18D

09-16-86 19

WATER-QUALITY FIELD REPORT

Date 860916 Time 1200 Station Project No. IWV

Station Name: IWV-3 265/39E-18D

Collected by: R. Baskin & D. Turner

Schedules: Schedule Nos.

Unique Nos.

Lab Codes

Collection period: Monthly, Quarterly, Semiannually, Other

Collection point: at wellhead

EWI, EDI, grab sample; If grab sample, explain:

No. of verticals , width of verticals , type of sampler

Field measurements

Discharge (meas. No. , rating, est.) Mean G. H. cfs

Air temperature °C

Water temperature 26.5 °C

Sp. Conductance (Meter type and No.) 650 Micromhos at 25°C
 calculations - if necessary - on back

pH (Meter type and No. Beckman pH 21 % slope adj.) 7.78 units

Dissolved oxygen (Meter type and No.) mg/L

Barometric pressure mm/Hg

Calibration value mg/L

Total coliform colonies /100 mL

Fecal coliform colonies /100 mL

Fecal streptococci colonies /100 mL

Alkalinity: Carbonate mg/L

Bicarbonate mg/L

Observations and remarks R26T36S18 W½ NW¼ NW

Static H₂O level 214.2', 400' Deep

Perfs. 126-276, 226-396

Mentioned Cu & Mn problems

WATER-QUALITY FIELD REPORT

Date 8 6 02 16 Time 2030 Station _____ Project No. IWV

Station Name: IWV-4 (Tungsten Peak Mine) 265/38E-10H

Collected by: R. Baskin & D. Turner

Schedules: Schedule Nos. _____

Unique Nos. _____

Lab Codes _____

Collection period: Monthly, Quarterly, Semiannually, Other

Collection point: At end of discharge pipe

EWI, EDI, grab sample; If grab sample, explain: _____

No. of verticals _____, width of verticals _____, type of sampler _____

Field measurements

Discharge (meas. No. _____, rating, est.) Mean G. H. _____ cfs

Air temperature _____ °C

Water temperature 22 °C

Sp. Conductance (Meter type and No. Labline) 770 Micromhos at 25°C
calculations - if necessary - on back

pH (Meter type and No. Beckman pH21 % slope adj. _____) 7.59 units

Dissolved oxygen (Meter type and No. _____) _____ mg/L

Barometric pressure _____ mm/Hg

Calibration value _____ mg/L

Total coliform _____ colonies /100 mL

Fecal coliform _____ colonies /100 mL

Fecal streptococci _____ colonies /100 mL

Alkalinity: Carbonate _____ mg/L

Bicarbonates _____ mg/L

Observations and remarks Horizontal hole into weathered

Granite at end of 3rd level

T26 R38 S. 10 SW SE, NW

Client : Mr. R. Baskin
 Address : P.O. Box 81164
 Salt Lake City, UT 84108
 Attn. :
 P.O. No.:

Sample ID: IWU-4 Tungsten Peak Mine
 Sample Date Time: 09/16/86 20:30

265/38E-10H Lab No.: 86-WI/05138
 Date Received: 09/29/86

Parameters

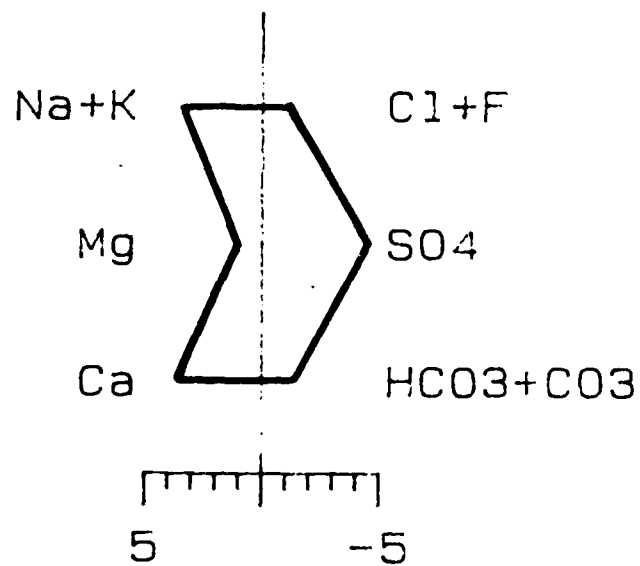
Alkalinity as CaCO3	84.	mg/l
Bicarbonate as CaCO3	84.	mg/l
Boron, dissolved	.22	mg/l
Calcium, dissolved	73.	mg/l
Carbonate as CaCO3	0.	mg/l
Chloride	37.	mg/l
Fluoride	2.0	mg/l
Hardness as CaCO3	232.	mg/l
Magnesium, dissolved	12.	mg/l
pH (lab)	7.9	units
Potassium, dissolved	5.	mg/l
SAR in water	2.17	
Silica, dissolved	23.6	mg/l
Sodium, dissolved	75.	mg/l
Sulfate	220.	mg/l
Cations (sum)	8.06	meq/l
Anions (sum)	7.46	meq/l
Cation-Anion Balance	3.87	%
Solids, total dissolved	510.	mg/l
Arsenic, dissolved	.001	mg/l
Iron, dissolved	-.02	mg/l
Conductivity (Field)	770.	umhos/cm
pH (Field)	7.59	units
Temperature (Field)	22.	

Remarks:

Note: Negative sign "-" denotes that the value is less than "<".

Ralph U. Poulsen, Laboratory Director

Ralph V. Poulsen



IWV=4 TUNGSTEN PEAK MINE

09-16-86

265/38E-10H

Well in T26S/38E-22D

pH 7.6 @ 25°C

CaCO₃ Hardness 210

Conductivity 690

Ion	Mg/l
-----	------

CO ₃	0
-----------------	---

HCO ₃	74.4
------------------	------

Cl	28.4
----	------

SO ₄	230.4
-----------------	-------

NH ₃	Tn
-----------------	----

NO ₂	0
-----------------	---

NO ₃	5.3
-----------------	-----

Ca	67.2
----	------

Mg	10.2
----	------

Na	62.2
----	------

Fe (Total)	0.1
------------	-----

Fe (Dissolved)	---
----------------	-----

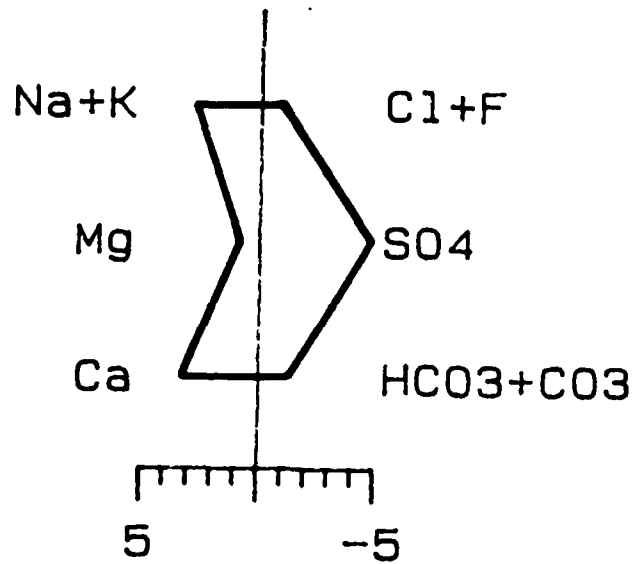
F	1.8
---	-----

Mn	0
----	---

K	4.5
---	-----

As	-0.01
----	-------

TDS @ 150°C	440.9
-------------	-------



26S/38E-22D 16 MARCH 76

WATER-QUALITY FIELD REPORT

Date 860217 Time 1000 Station ----- Project No. IWV

Station Name: IWV-5 (Beckmann Spring)

Collected by: R Baskin & D. Turner 265/382-33P

Schedules: Schedule Nos. -----

Unique Nos. -----

Lab Codes -----

Collection period: Monthly, Quarterly, Semiannually, Other

Collection point: Pipe below holding Tank

EWI, EDI, grab sample; If grab sample, explain: -----

No. of verticals -----, width of verticals -----, type of sampler -----

Field measurements

Discharge (meas. No. -----, rating, est.) Mean G. H. ----- cfs

Air temperature ----- °C

Water temperature 23 °C

Sp. Conductance (Meter type and No. Labline) 840 Micromhos at 25°C
calculations - if necessary - on back

pH (Meter type and No. Beckman pH21) % slope adj. ----- 6.96 units

Dissolved oxygen (Meter type and No. -----) ----- mg/L

Barometric pressure ----- mm/Hg

Calibration value ----- mg/L

Total coliform ----- colonies /100 mL

Fecal coliform ----- colonies /100 mL

Fecal streptococci ----- colonies /100 mL

Alkalinity: Carbonate ----- mg/L

Bicarbonate ----- mg/L

Observations and remarks Spring supplying domestic use

Client : Mr. R. Baskin
 Address : P.O. Box 81164
 Salt Lake City, UT 84108
 Attn. :
 P.O. No.:

Sample ID: IWU-5 Beckmann Spring 265/38E-33P Lab No.: 86-WI/05139
 Sample Date Time: 09/17/86 10:00 Date Received: 09/29/86

Parameters

Alkalinity as CaCO3	354.	mg/l
Bicarbonate as CaCO3	354.	mg/l
Boron, dissolved	.13	mg/l
Calcium, dissolved	104.	mg/l
Carbonate as CaCO3	0.	mg/l
Chloride	19.	mg/l
Fluoride	.50	mg/l
Hardness as CaCO3	399.	mg/l
Magnesium, dissolved	34.	mg/l
pH (lab)	7.5	units
Potassium, dissolved	3.	mg/l
SAR in water	1.08	
Silica, dissolved	62.0	mg/l
Sodium, dissolved	49.	mg/l
Sulfate	95.	mg/l
Cations (sum)	10.22	meq/l
Anions (sum)	9.61	meq/l
Cation-Anion Balance	3.08	%
Solids, total dissolved	570.	mg/l
Arsenic, dissolved	-.001	mg/l
Iron, dissolved	-.02	mg/l
Conductivity (Field)	840.	umhos/cm
pH (Field)	6.96	units
Temperature (Field)	23.	

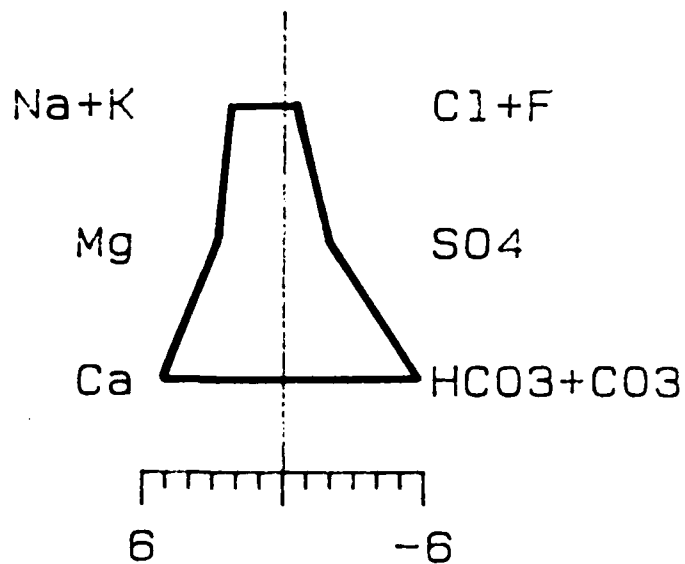
Remarks:

Note: Negative sign "-" denotes that the value is less than "<".

Ralph U. Poulsen, Laboratory Director

Ralph V. Poulsen

45



IWV=5 BECKMAN SPRING
265/38E-33P

09-17-86

WATER-QUALITY FIELD REPORT

Date 860217 Time 1055 Station _____ Project No. IWV

Station Name: IWV-6 265/38E-35L

Collected by: R. Baskin & D. Turner

Schedules: Schedule Nos. _____

Unique Nos. _____

Lab Codes _____

Collection period: Monthly, Quarterly, Semiannually, Other _____

Collection point: at wellhead

EWI, EDI, grab sample; If grab sample, explain: _____

No. of verticals _____, width of verticals _____, type of sampler _____

Field measurements

Discharge (meas. No. _____, rating, est.) Mean G. H. _____ cfs

Air temperature _____ °C

Water temperature 27.5 °C

Sp. Conductance (Meter type and No. Labline) 225 Micromhos at 25°C
 calculations - if necessary - on back

pH (Meter type and No. Beckman pH21 % slope adj. _____) 9.36 units

Dissolved oxygen (Meter type and No. _____) _____ mg/L

Barometric pressure _____ mm/Hg

Calibration value _____ mg/L

Total coliform _____ colonies /100 mL

Fecal coliform _____ colonies /100 mL

Fecal streptococci _____ colonies /100 mL

Alkalinity: Carbonate _____ mg/L

Bicarbonates _____ mg/L

Observations and remarks TD = 500' Pump C-440

Client : Mr. R. Baskin
 Address : P.O. Box 81164
 Salt Lake City, UT 84108
 Attn. :
 P.O. No.:

Sample ID: IWU-6 265/38E-35L
 Sample Date Time: 09/17/86 10:55

Lab No.: 86-WI/05140
 Date Received: 09/29/86

Parameters

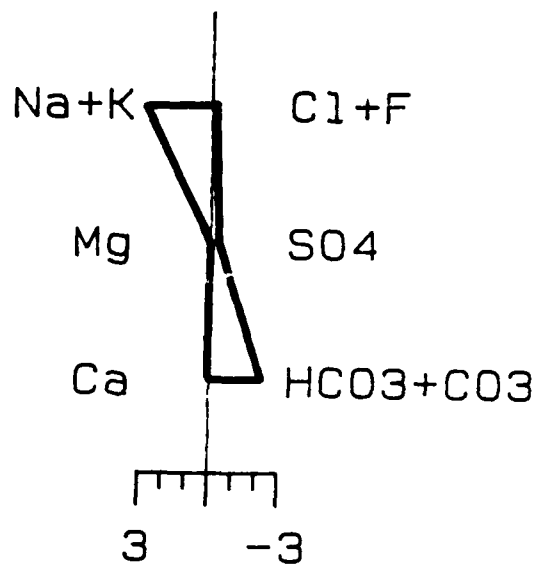
Alkalinity as CaCO3	106.	mg/l
Bicarbonate as CaCO3	74.	mg/l
Boron, dissolved	.09	mg/l
Calcium, dissolved	2.	mg/l
Carbonate as CaCO3	32.	mg/l
Chloride	6.	mg/l
Fluoride	.30	mg/l
Hardness as CaCO3	1.	mg/l
Magnesium, dissolved	-1.	mg/l
pH (lab)	9.3	units
Potassium, dissolved	1.	mg/l
SAR in water	30.61	
Silica, dissolved	18.4	mg/l
Sodium, dissolved	66.	mg/l
Sulfate	20.	mg/l
Cations (sum)	2.95	meq/l
Anions (sum)	2.71	meq/l
Cation-Anion Balance	4.24	%
Solids, total dissolved	174.	mg/l
Arsenic, dissolved	.003	mg/l
Iron, dissolved	.05	mg/l
Conductivity (Field)	295.	umhos/cm
pH (Field)	9.36	units
Temperature (Field)	27.5	

Remarks:

Note: Negative sign "-" denotes that the value is less than "<".

Ralph U. Poulsen, Laboratory Director

Ralph V. Poulsen



WELL 275/39E-21G 9/17/86

WATER-QUALITY FIELD REPORT

Y M D
Date 8 6 0 2 1 7 Time 1 1 4 5 Station ----- Project No. IWV

Station Name: IWV-7 275/39E-21G

Collected by: R. Baskin & D. Turner

Schedules: Schedule Nos. -----

Unique Nos. -----

Lab Codes -----

Collection period: Monthly, Quarterly, Semiannually, Other

Collection point: At wellhead

EWI, EDI, grab sample; If grab sample, explain: -----

No. of verticals -----, width of verticals -----, type of sampler -----

Field measurements

Discharge (meas. No. -----, rating, est.) Mean G. H. ----- cfs

Air temperature ----- °C

Water temperature 30 °C

Sp. Conductance (Meter type and No. Labline) 465 Micromhos at 25°C
calculations - if necessary - on back

pH (Meter type and No. Beckman pH 21 % slope adj. -----) 7.51 units

Dissolved oxygen (Meter type and No. -----) ----- mg/L

Barometric pressure ----- mm/Hg

Calibration value ----- mg/L

Total coliform ----- colonies /100 mL

Fecal coliform ----- colonies /100 mL

Fecal streptococci ----- colonies /100 mL

Alkalinity: Carbonate ----- mg/L

Bicarbonate ----- mg/L

Observations and remarks Lines mentioned only at 3 of water in the well. PER 459' - TD 470'

Client : Mr. R. Baskin
Address : P.O. Box 81164
 Salt Lake City, UT 84108

Attn. :
P.O. No.:

Sample ID: IWU-7 275/39E-21G
Sample Date Time: 09/17/86 11:45

Lab No.: 86-WI/05141
Date Received: 09/29/86

Parameters

Alkalinity as CaCO3	122.	mg/l
Bicarbonate as CaCO3	122.	mg/l
Boron, dissolved	.26	mg/l
Calcium, dissolved	41.	mg/l
Carbonate as CaCO3	0.	mg/l
Chloride	17.	mg/l
Fluoride	.40	mg/l
Hardness as CaCO3	148.	mg/l
Magnesium, dissolved	11.	mg/l
pH (lab)	8.0	units
Potassium, dissolved	8.	mg/l
SAR in water	1.48	
Silica, dissolved	78.5	mg/l
Sodium, dissolved	41.	mg/l
Sulfate	49.	mg/l
Cations (sum)	4.96	meq/l
Anions (sum)	3.95	meq/l
Cation-Anion Balance	11.34	%
Solids, total dissolved	348.	mg/l
Arsenic, dissolved	.010	mg/l
Iron, dissolved	-.02	mg/l
Conductivity (Field)	465.	umhos/cm
pH (Field)	7.51	units
Temperature (Field)	30.	

Remarks: Cations & anions reanalyzed to verify CAB%.

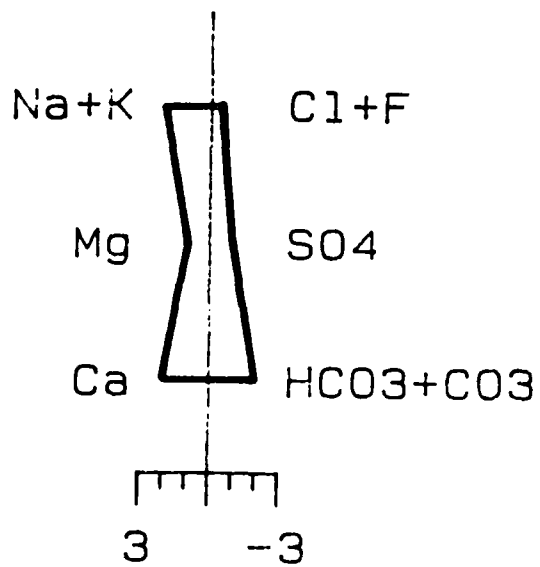
Note: Negative sign "-" denotes that the value is less than "<".

Ralph U. Poulsen, Laboratory Director

Ralph V. Poulsen

QCC 124

(20)



IWV-7

275/39E-21G

09-17-86 11

WATER-QUALITY FIELD REPORT

Date 8 6 2 1 7 Time 1 2 1 5 Station ----- Project No. IWV

Station Name: IWV-8 275/39E-28

Collected by: R. Baskin & D. Turner

Schedules: Schedule Nos. -----

Unique Nos. -----

Lab Codes -----

Collection period: Monthly, Quarterly, Semiannually, Other

Collection point: At wellhead

EWI, EDI, grab sample; If grab sample, explain: -----

No. of verticals -----, width of verticals -----, type of sampler -----

Field measurements

Discharge (meas. No. -----, rating, est.) Mean G. H. ----- cfs

Air temperature ----- °C

Water temperature 22.5 °C

Sp. Conductance (Meter type and No. Labine) 840 Micromhos at 25°C
calculations - if necessary - on back

pH (Meter type and No. Beckman pH 21 % slope adj. -----) 8.01 units

Dissolved oxygen (Meter type and No. -----) ----- mg/L

Barometric pressure ----- mm/Hg

Calibration value ----- mg/L

Total coliform ----- colonies /100 mL

Fecal coliform ----- colonies /100 mL

Fecal streptococci ----- colonies /100 mL

Alkalinity: Carbonate ----- mg/L

Bicarbonate ----- mg/L

Observations and remarks Desert Const. Site

Client : Mr. R. Baskin
Address : P.O. Box 81164
 Salt Lake City, UT 84108
Attn. :
P.O. No.:

Sample ID: IWU-8 275/39E-28
Sample Date Time: 09/17/86 12:15

Lab No.: 86-WI/05142
Date Received: 09/29/86

Parameters

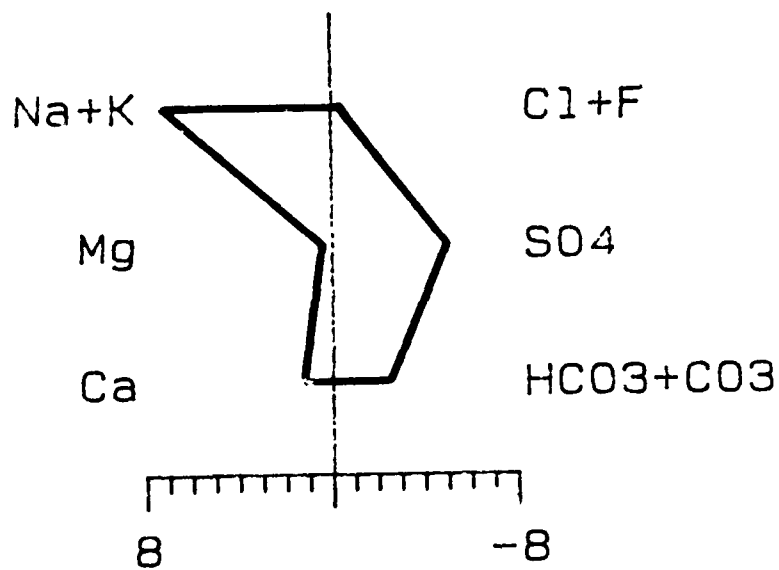
Alkalinity as CaCO3	154.	mg/l
Bicarbonate as CaCO3	154.	mg/l
Boron, dissolved	.23	mg/l
Calcium, dissolved	25.	mg/l
Carbonate as CaCO3	0.	mg/l
Chloride	13.	mg/l
Fluoride	.30	mg/l
Hardness as CaCO3	83.	mg/l
Magnesium, dissolved	5.	mg/l
pH (lab)	8.2	units
Potassium, dissolved	3.	mg/l
SAR in water	7.97	
Silica, dissolved	23.6	mg/l
Sodium, dissolved	165.	mg/l
Sulfate	241.	mg/l
Cations (sum)	9.00	meq/l
Anions (sum)	8.50	meq/l
Cation-Anion Balance	2.86	%
Solids, total dissolved	538.	mg/l
Arsenic, dissolved	.003	mg/l -
Iron, dissolved	.12	mg/l
Conductivity (Field)	840.	umhos/cm
pH (Field)	8.01	units
Temperature (Field)	29.5	

Remarks:

Note: Negative sign "-" denotes that the value is less than "<".

Ralph U. Poulsen, Laboratory Director

Ralph V. Poulsen



IWV-8

275/39E-28

09-17-86

WATER-QUALITY FIELD REPORT

Date ^{Y M D} 8 6 2 1 7 Time 0 4 3 0 Station . . . Project No. ILWV

Station Name: IWV-9 (Lumber Mill Well)

Collected by: R. Baskin & D. Turner

Schedules: Schedule Nos. _____

Unique Nos. _____

Lab Codes _____

Collection period: Monthly, Quarterly, Semiannually, Other _____

Collection point: At Irrigation line just down from wellhead

EWI, EDI, grab sample; If grab sample, explain: _____

No. of verticals _____, width of verticals _____, type of sampler _____

Field measurements

Discharge (meas. No. _____, rating, est.) Mean G. H. _____ cfs

Air temperature _____ °C

Water temperature 23 °C

Sp. Conductance (Meter type and No. Labline) 20.50 Micromhos
 calculations - if necessary - on back at 25°C

pH (Meter type and No. Beckman PH 21 % slope adj.) 7.24 units

Dissolved oxygen (Meter type and No. _____) _____ mg/L

Barometric pressure _____ mm/Hg

Calibration value _____ mg/L

Total coliform _____ colonies

Fecal coliform _____ /100 mL colonies

	/100 mL
Fecal streptococci	

Alkalinity: Carbonate _____ /100 mL
_____ mg/L

Bicarbonate _____ mg/L

Observations and remarks From Irrigation Well

TD 611'

Client : Mr. R. Baskin
 Address : P.O. Box 81164
 Salt Lake City, UT 84108
 Attn. :
 P.O. No.:

Sample ID: IQU-9 Lumber Mill Well
 Sample Date Time: 09/17/86 04:30

Lab No.: 86-WI/05143
 Date Received: 09/29/86

Parameters

Alkalinity as CaCO3	640.	mg/l
Bicarbonate as CaCO3	640.	mg/l
Boron, dissolved	6.50	mg/l
Calcium, dissolved	.70.	mg/l
Carbonate as CaCO3	0.	mg/l
Chloride	174.	mg/l
Fluoride	70	mg/l
Hardness as CaCO3	401.	mg/l
Magnesium, dissolved	55.	mg/l
pH (lab)	7.8	units
Potassium, dissolved	23.	mg/l
SAR in water	7.94	
Silica, dissolved	32.2	mg/l
Sodium, dissolved	361.	mg/l
Sulfate	187.	mg/l
Cations (sum)	24.49	meq/l
Anions (sum)	21.60	meq/l
Cation-Anion Balance	6.27	%
Solids, total dissolved	1228.	mg/l
Arsenic, dissolved	.014	mg/l
Iron, dissolved	-.02	mg/l
Conductivity (Field)	2050.	umhos/cm
pH (Field)	7.24	units
Temperature (Field)	23.	

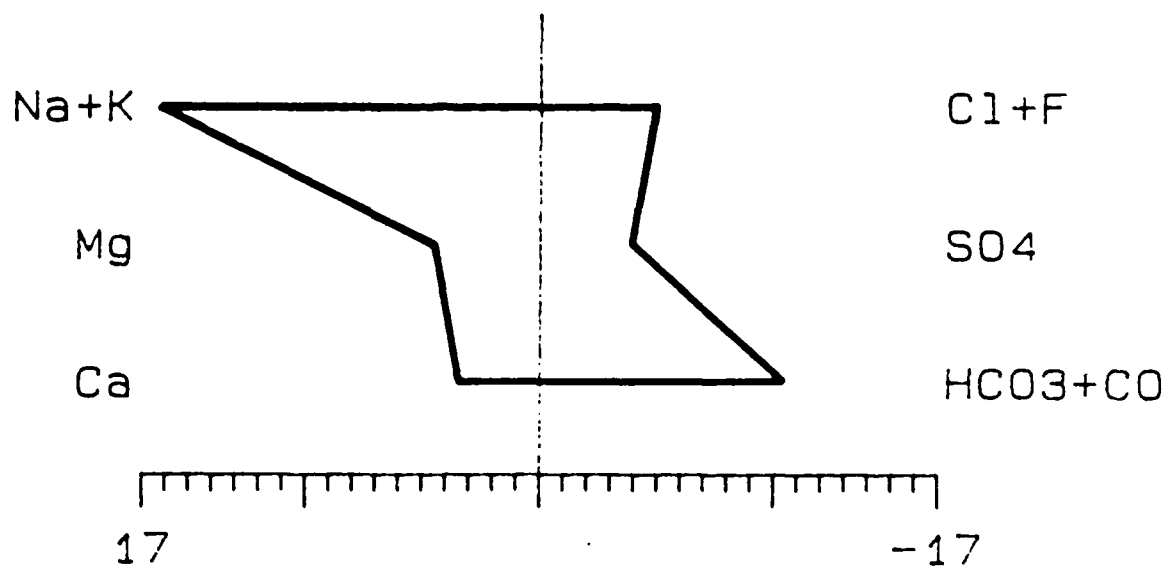
Remarks:

Note: Negative sign "-" denotes that the value is less than "<".

Ralph U. Poulsen, Laboratory Director

Ralph V. Poulsen

(3)



(IWV-9 LUMBER MILL WELL 09-17-86 16

WATER-QUALITY FIELD REPORT

Date 8 6 2 2 1 7 Time 6 53 Station ----- Project No. IWV

Station Name: IWV-10 (Sand Canyon)

Collected by: R. Baskin & D. Turner

Schedules: Schedule Nos. _____

Unique Nos. _____

Lab Codes _____

Collection period: Monthly, Quarterly, Semiannually, Other _____

Collection point: Stream Channel

EWI, EDI, grab sample; If grab sample, explain: _____

No. of verticals _____, width of verticals _____, type of sampler _____

Field measurements

Discharge (meas. No. _____, rating, est.) Mean G. H. _____ cfs

Air temperature _____ °C

Water temperature 17 °C

Sp. Conductance (Meter type and No. Labline) 76.5 Micromhos at 25°C
 calculations - if necessary - on back

pH (Meter type and No. Beckman pH 21 % slope adj. _____) 7.23 units

Dissolved oxygen (Meter type and No. _____) _____ mg/L

Barometric pressure _____ mm/Hg

Calibration value _____ mg/L

Total coliform _____ colonies /100 mL

Fecal coliform _____ colonies /100 mL

Fecal streptococci _____ colonies /100 mL

Alkalinity: Carbonate _____ mg/L

Bicarbonate _____ mg/L

Observations and remarks Surface Water!

Client : Mr. R. Baskin
 Address : P.O. Box 81164
 Salt Lake City, UT 84108
 Attn. :
 P.O. No.:

Sample ID: IWU-10 Sand Canyon Surface Water
 Sample Date Time: 09/17/86 05:30

Lab No.: 86-WI/05144
 Date Received: 09/29/86

Parameters

Alkalinity as CaCO3	304.	mg/l
Bicarbonate as CaCO3	304.	mg/l
Boron, dissolved	.35	mg/l
Calcium, dissolved	91.	mg/l
Carbonate as CaCO3	0.	mg/l
Chloride	17.	mg/l
Fluoride	1.4	mg/l
Hardness as CaCO3	322.	mg/l
Magnesium, dissolved	23.	mg/l
pH (lab)	7.7	units
Potassium, dissolved	5.	mg/l
SAR in water	1.74	
Silica, dissolved	47.0	mg/l
Sodium, dissolved	71.	mg/l
Sulfate	62.	mg/l
Cations (sum)	9.69	meq/l
Anions (sum)	7.86	meq/l
Cation-Anion Balance	10.43	%
Solids, total dissolved	470.	mg/l
Arsenic, dissolved	.010	mg/l
Iron, dissolved	-.02	mg/l
Conductivity (Field)	765.	umhos/cm
pH (Field)	7.23	units
Temperature (Field)	17.	

Remarks:

Note: Negative sign "-" denotes that the value is less than "<".

Ralph V. Poulsen, Laboratory Director

Ralph V. Poulsen

I WV=10 SAND CANYON SURFACE WATER 0

WATER-QUALITY FIELD REPORT

Y M D 1950
 Date 860917 Time 20 Station ----- Project No. IUV

Station Name: IUV-11 265/37E-23N

Collected by: R. Baskin & D. Turner

Schedules: Schedule Nos. -----

Unique Nos. -----

Lab Codes -----

Collection period: Monthly, Quarterly, Semiannually, Other -----

Collection point: Pipe from Windmill

EWI, EDI, grab sample; If grab sample, explain: -----

No. of verticals -----, width of verticals -----, type of sampler -----

Field measurements

Discharge (meas. No. -----, rating, est.) Mean G. H. ----- cfs

Air temperature ----- °C

Water temperature 16 °C

Sp. Conductance (Me. Labline and No. -----)
 "calculations - if necessary - on back" 595 Micromhos at 25°C

pH (Meter type and No. Beckman pH21 % slope adj. -----) 7.23 units

Dissolved oxygen (Meter type and No. -----) ----- mg/L

Barometric pressure ----- mm/Hg

Calibration value ----- mg/L

Total coliform ----- colonies

Fecal coliform ----- /100 mL

Fecal streptococci ----- colonies

Alkalinity: Carbonate ----- /100 mL

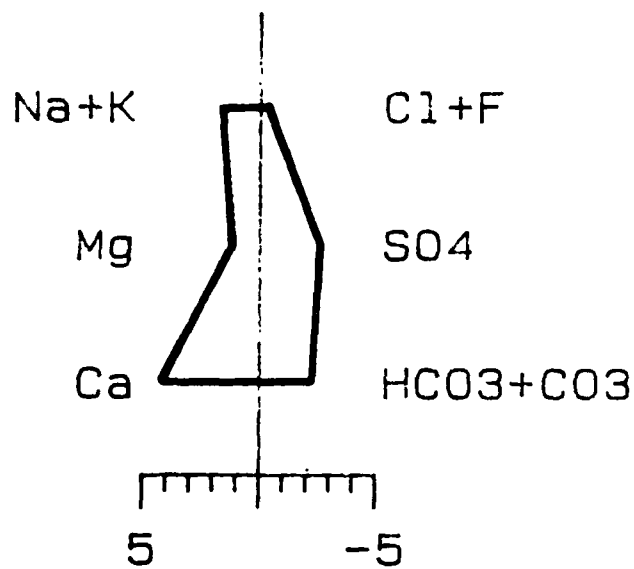
Bicarbonate ----- mg/L

Observations and remarks -----

IWV 11 - WALKER WELL

Temperature °C	16
pH	7.23
Conductivity	830
	mg/l
Na	36
K	2
Mg	14
Ca	85
Cl	13
F	0.2
SO ₄	126
HCO ₃	138
CO ₃	0
S ₁ O ₂	47
B	0.35
As	0.010
Fe	-0.02
TDS Calc	461.56

42



IWV=11

265/37E-23N

09-17-86 1950

WATER-QUALITY FIELD REPORT

Date 860918 Time 1330 Station ----- Project No. IWV

Station Name: IWV-12 (Little Lake Spring) 235.28E-17

Collected by: R. Barkin & Dave Turner

Schedules: Schedule Nos. -----

Unique Nos. -----

Lab Codes -----

Collection period: Monthly, Quarterly, Semiannually, Other -----

Collection point: ≈ 10 ft D.S. from discharge point

EWI, EDI, grab sample; If grab sample, explain: -----

No. of verticals -----, width of verticals -----, type of sampler -----

Field measurements

Discharge (meas. No. -----, rating, Est.) Mean G. H. -----

≈ 1 cfs

Air temperature -----

°C

Water temperature -----

°C

Sp. Conductance (Meter type and No. -----)

calculations - if necessary - on back

1810 Micromhos
at 25°C

pH (Meter type and No. ----- % slope adj. -----)

7.25 units

Dissolved oxygen (Meter type and No. -----)

mg/L

Barometric pressure ----- mm/Hg

Calibration value ----- mg/L

Total coliform -----

colonies
/100 mL

Fecal coliform -----

colonies
/100 mL

Fecal streptococci -----

colonies
/100 mL

Alkalinity: Carbonate -----

mg/L

Bicarbonate -----

mg/L

Observations and remarks Spring from Alluvium at Base of
slope ≈ 10 ft discharge

Client : Mr. R. Baskin
Address : P.O. Box 81164
 Salt Lake City, UT 84108
Attn. :
P.O. No.:

Sample ID: IWU-12 Little Lake Spring 235.28E-17 Lab No.: 86-WI/05146
Sample Date Time: 09/18/86 13:30 Date Received: 09/29/86

Parameters

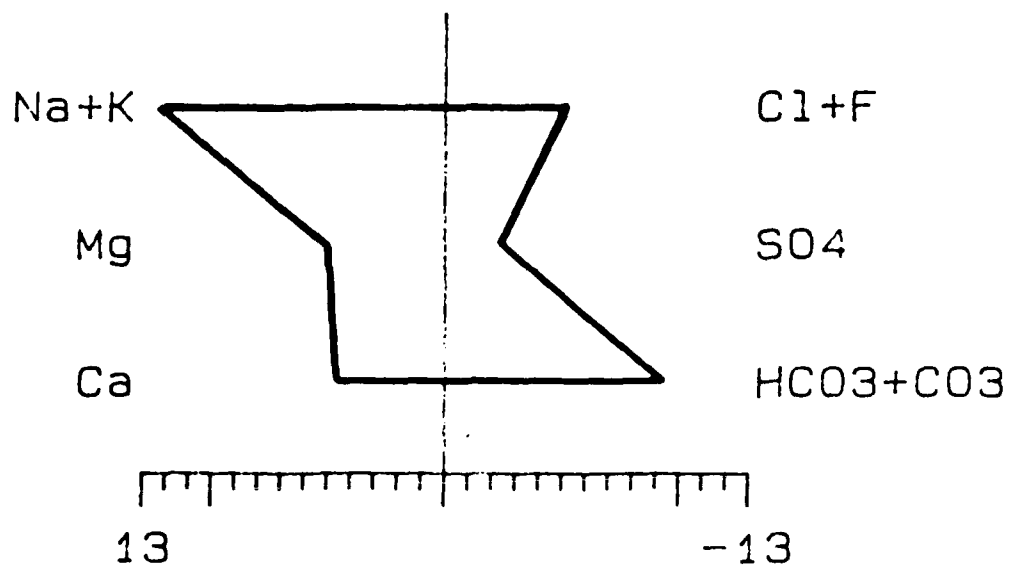
Alkalinity as CaCO3	572.	mg/l
Bicarbonate as CaCO3	572.	mg/l
Boron, dissolved	4.95	mg/l
Calcium, dissolved	93.	mg/l
Carbonate as CaCO3	0.	mg/l
Chloride	181.	mg/l
Fluoride	.70	mg/l
Hardness as CaCO3	483.	mg/l
Magnesium, dissolved	61.	mg/l
pH (lab)	7.8	units
Potassium, dissolved	22.	mg/l
SAR in water	5.41	
Silica, dissolved	70.0	mg/l
Sodium, dissolved	270.	mg/l
Sulfate	113.	mg/l
Cations (sum)	22.10	meq/l
Anions (sum)	18.88	meq/l
Cation-Anion Balance	7.86	%
Solids, total dissolved	1084.	mg/l
Arsenic, dissolved	.049	mg/l
Iron, dissolved	-.02	mg/l
Conductivity (Field)	1810.	umhos/cm
pH (Field)	7.25	units
Temperature (Field)	20.	

Remarks:

Note: Negative sign "-" denotes that the value is less than "<".

Ralph U. Poulsen, Laboratory Director

Ralph V. Poulsen



IWV-12 09-18-86 1330 235/28E-17

WATER-QUALITY FIELD REPORT

Date 8 6 0 9 1 2 Time 1 7 4 5 Station Project No. IWV

Station Name: IWV-13 235/38E-80

Collected by: R. Boskin & D. Turner

Schedules: Schedule Nos.

Unique Nos.

Lab Codes

Collection period: Monthly, Quarterly, Semiannually, Other

Collection point: @ Wellhead

EWI, EDI, grab sample; If grab sample, explain:

No. of verticals , width of verticals , type of sampler

Field measurements

Discharge (meas. No. , rating, est.) Mean G. H. cfs

Air temperature °C

Water temperature 24 °C

Sp. Conductance (Meter type and No. Labline) 1240 Micromhos at 25°C
"calculations - if necessary - on back"

pH (Meter type and No. Beckman pH 21 % slope adj.) 6.61 units

Dissolved oxygen (Meter type and No.) mg/L

Barometric pressure mm/Hg

Calibration value mg/L

Total coliform colonies /100 mL

Fecal coliform colonies /100 mL

Fecal streptococci colonies /100 mL

Alkalinity: Carbonate mg/L

Bicarbonate mg/L

Observations and remarks Pumping 5 days @ \approx 300 GPM, Water Table @ 90', 210' TD, imp @ 17.5 feet

Client : Mr. R. Baskin
Address : P.O. Box 81164
 Salt Lake City, UT 84108
Attn. :
P.O. No.:

Sample ID: IWV-13 235/38E-80
Sample Date Time: 09/19/86 17:45

Lab No.: 86-WI/05147
Date Received: 09/29/86

Parameters

Alkalinity as CaCO3	506.	mg/l
Bicarbonate as CaCO3	506.	mg/l
Boron, dissolved	2.20	mg/l
Calcium, dissolved	99.	mg/l
Carbonate as CaCO3	0.	mg/l
Chloride	65.	mg/l
Fluoride	.60	mg/l
Hardness as CaCO3	428.	mg/l
Magnesium, dissolved	44.	mg/l
pH (lab)	7.3	units
Potassium, dissolved	14.	mg/l
SAR in water	3.40	
Silica, dissolved	64.0	mg/l
Sodium, dissolved	160.	mg/l
Sulfate	78.	mg/l
Cations (sum)	15.96	meq/l
Anions (sum)	13.58	meq/l
Cation-Anion Balance	8.06	%
Solids, total dissolved	778.	mg/l
Arsenic, dissolved	.021	mg/l
Iron, dissolved	-.02	mg/l
Conductivity (Field)	1240.	umhos/cm
pH (Field)	6.61	units
Temperature (Field)	24.	

Remarks:

Note: Negative sign "-" denotes that the value is less than "<".

Ralph U. Poulsen, Laboratory Director

Ralph V. Poulsen

Na+K

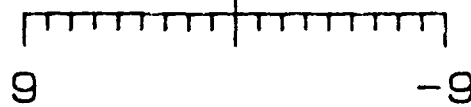
Cl+F

Mg

SO₄

Ca

HCO₃+CO₃



IWV=13

09-19-86

235/38E-80

AGRICULTURE
CHEMICAL ANALYSIS
PETROLEUM

BC

LABORATORIES, INC.

J. J. EGLIN, REG. CHEM. ENGR.

4100 PIERCE RD., BAKERSFIELD, CALIFORNIA 93308 PHONE 327-4911

Date Reported: 09/29/87
Date Received: 09/22/87
Laboratory No.: 19739
Req. #NG0530-7261-8001

WATER ANALYSIS

Sample Description:

08/28/87

<u>Constituents</u>	<u>mg/liter</u>
Calcium	82.
Magnesium	26.
Sodium	153.
Potassium	19.
Hydroxide	0.
Carbonate	0.
Bicarbonate	553.
Chloride	78.2
Sulfate	109.
Nitrate	(-) 0.4
Fluoride	0.72
Iron	(-) 0.05
Manganese	0.03
Arsenic	0.06
Copper	(-) 0.01
Zinc	0.04
Total Dissolved Solids @ 105 C	875.
Mercury	(-) 0.0002
Aluminum	(-) 0.5
Boron	1.6
Silica	82.
Ammonium	(-) 0.3
Lithium	0.28
Bromide	0.8
Phosphate	(-) 0.1
Salinity as NaCl	76.0
pH	7.8
Electrical Conductivity, micromhos	1,300.

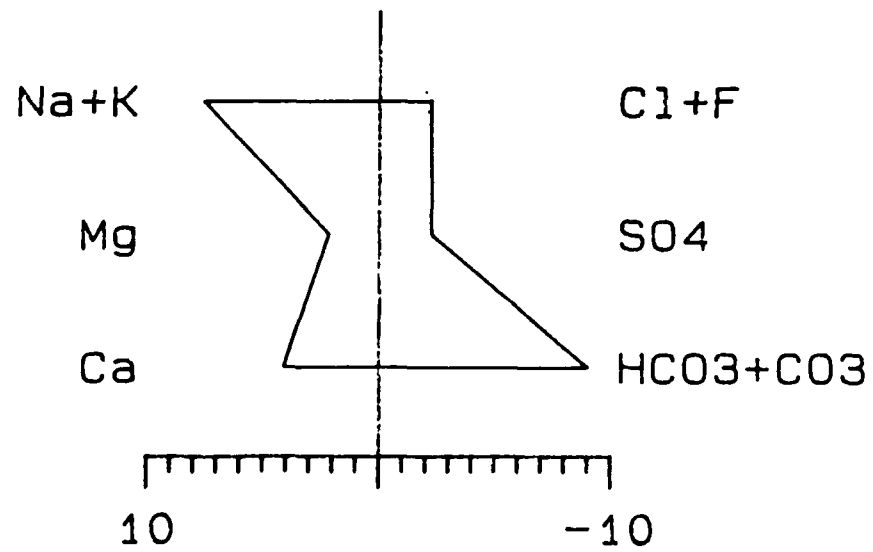
(-) refers to "less than"

B C LABORATORIES, INC.

BY

J. J. Eglin

E-43



GRID CORP 08-28-87

WATER-QUALITY FIELD REPORT

Y M D
Date 860918 Time 1045 Station Project No. IWV

Station Name: IWV-14 275/40E-1K

Collected by: R. Baskin & D. Turner

Schedules: Schedule Nos.

Unique Nos.

Lab Codes

Collection period: Monthly, Quarterly, Semiannually, Other

Collection point: at Wellhead

EWI, EDI, grab sample; If grab sample, explain:

No. of verticals , width of verticals , type of sampler

Field measurements

Discharge (meas. No. , rating, est.) Mean G. H. cfs

Air temperature °C

Water temperature 23 °C

Sp. Conductance (Meter type and No. Labline) 765 Micromhos
calculations - if necessary - on back at 25°C

pH (Meter type and No. Beckman pH 21 % slope adj.) 7.99 units

Dissolved oxygen (Meter type and No.) mg/L

Barometric pressure mm/Hg

Calibration value mg/L

Total coliform colonies /100 mL

Fecal coliform colonies /100 mL

Fecal streptococci colonies /100 mL

Alkalinity: Carbonate mg/L

Bicarbonate mg/L

Observations and remarks

Client : Mr. R. Baskin
 Address : P.O. Box 81164
 Salt Lake City, UT 84108
 Attn. :
 P.O. No.:

Sample ID: IWU-14 275/40E-1K
 Sample Date Time: 09/18/86 10:45

Lab No.: 86-WI/05148
 Date Received: 09/29/86

Parameters

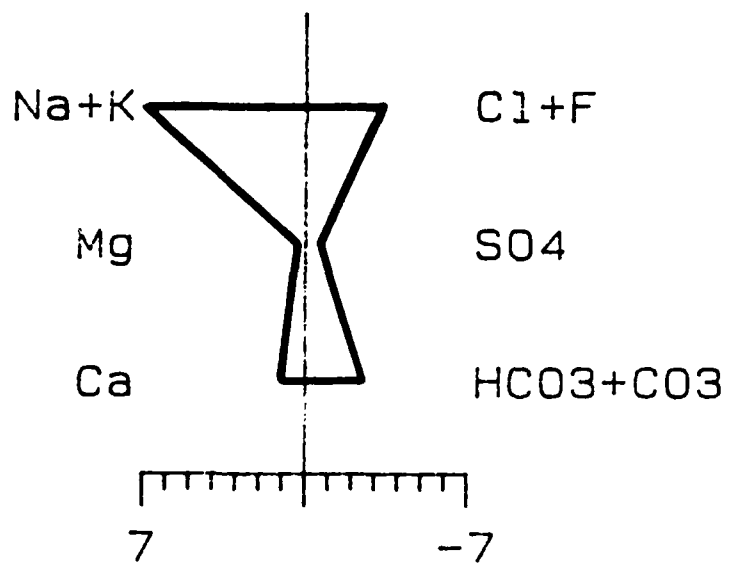
Alkalinity as CaCO3	152.	mg/l
Bicarbonate as CaCO3	152.	mg/l
Boron, dissolved	1.27	mg/l
Calcium, dissolved	22.	mg/l
Carbonate as CaCO3	0.	mg/l
Chloride	114.	mg/l
Fluoride	1.90	mg/l
Hardness as CaCO3	71.	mg/l
Magnesium, dissolved	4.	mg/l
pH (lab)	8.1	units
Potassium, dissolved	3.	mg/l
SAR in water	8.23	
Silica, dissolved	53.5	mg/l
Sodium, dissolved	158.	mg/l
Sulfate	29.	mg/l
Cations (sum)	8.46	meq/l
Anions (sum)	6.84	meq/l
Cation-Anion Balance	10.59	%
Solids, total dissolved	452.	mg/l
Arsenic, dissolved	.037	mg/l
Iron, dissolved	.02	mg/l
Conductivity (Field)	765.	umhos/cm
pH (Field)	7.99	units
Temperature (Field)	23.	

Remarks:

Note: Negative sign "-" denotes that the value is less than "<".

Ralph U. Poulsen, Laboratory Director

Ralph V. Poulsen



IWV-14

275/40E-1K

09-18-86

WATER-QUALITY FIELD REPORT

Date 860919 Time 0730 Station ----- Project No. IWV

Station Name: IWV-15 225/38E-11K

Collected by: R. Barkin & D. Turner

Schedules: Schedule Nos. -----

Unique Nos. -----

Lab Codes -----

Collection period: Monthly, Quarterly, Semiannually, Other -----

Collection point: At wellhead

EWI, EDI, grab sample; If grab sample, explain: -----

No. of verticals -----, width of verticals -----, type of sampler -----

Field measurements

Discharge (meas. No. -----, rating, est.) Mean G. H. ----- cfs

Air temperature ----- °C

Water temperature 24.5 °C

Sp. Conductance (Meter type and No. Labline) 1575 Micromhos at 25°C
 "calculations - if necessary - on back"

pH (Meter type and No. Beckman pH 21 % slope adj. -----) 7.33 units

Dissolved oxygen (Meter type and No. -----) ----- mg/L

Barometric pressure ----- mm/Hg

Calibration value ----- mg/L

Total coliform ----- colonies /100 mL

Fecal coliform ----- colonies /100 mL

Fecal streptococci ----- colonies /100 mL

Alkalinity: Carbonate ----- mg/L

Bicarbonate ----- mg/L

Observations and remarks Well has been on for quite a while

Client : Mr. R. Baskin
Address : P.O. Box 81164
 Salt Lake City, UT 84108
Attn. :
P.O. No.:

Sample ID: IWU-15 225/38E-11K
Sample Date Time: 09/19/86 07:30

Lab No.: 86-WI/05149
Date Received: 09/29/86

Parameters

Alkalinity as CaCO3	388.	mg/l
Bicarbonate as CaCO3	388.	mg/l
Boron, dissolved	5.95	mg/l
Calcium, dissolved	71.	mg/l
Carbonate as CaCO3	0.	mg/l
Chloride	164.	mg/l
Fluoride	.50	mg/l
Hardness as CaCO3	309.	mg/l
Magnesium, dissolved	32.	mg/l
pH (lab)	7.8	units
Potassium, dissolved	17.	mg/l
SAR in water	6.11	
Silica, dissolved	26.6	mg/l
Sodium, dissolved	244.	mg/l
Sulfate	181.	mg/l
Cations (sum)	17.35	meq/l
Anions (sum)	16.15	meq/l
Cation-Anion Balance	3.58	%
Solids, total dissolved	938.	mg/l
Arsenic, dissolved	.002	mg/l
Iron, dissolved	-.02	mg/l
Conductivity (Field)	1575.	umhos/cm
pH (Field)	7.33	units
Temperature (Field)	24.5	

Remarks:

Note: Negative sign "-" denotes that the value is less than "<".

Ralph U. Poulsen, Laboratory Director

Ralph V. Poulsen

Na+K

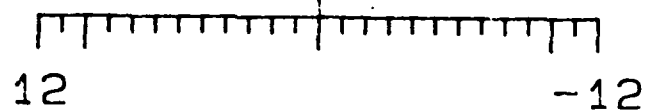
Cl+F

Mg

SO₄

Ca

HCO₃+CO₃



IWV-15

255/38E-36B

9/19/8

WATER-QUALITY FIELD REPORT

Date 860921 Time 1045 Station ----- Project No. IWV

Station Name: IWV-17 (Indian Wells Canyon) 265/38E-7

Collected by: R. Boskin & D. Turner

Schedules: Schedule Nos. -----

Unique Nos. -----

Lab Codes -----

Collection period: Monthly, Quarterly, Semiannually, Other -----

Collection point: Surface Water - Rapidly moving

EWI, EDI, grab sample; If grab sample, explain: -----

No. of verticals -----, width of verticals -----, type of sampler -----

Field measurements

Discharge (meas. No. -----, rating, est.) Mean G. H. ----- cfs

Air temperature ----- °C

Water temperature 13 °C

Sp. Conductance (Meter type and No. Labline) 720 Micromhos at 25°C
calculations - if necessary - on back

pH (Meter type and No. Beckman pH21 % slope adj. -----) 8.12 units

Dissolved oxygen (Meter type and No. -----) ----- mg/L

Barometric pressure ----- mm/Hg

Calibration value ----- mg/L

Total coliform ----- colonies /100 mL

Fecal coliform ----- colonies /100 mL

Fecal streptococci ----- colonies /100 mL

Alkalinity: Carbonate ----- mg/L

Bicarbonate ----- mg/L

Observations and remarks Surface Water - Rapidly moving
10 gpm, sampling location @ T265 R. 38E 7BAA

Client : Mr. R. Baskin
 Address : P.O. Box 81164
 Salt Lake City, UT 84108
 Attn. :
 P.O. No.:

Sample ID: IMU-17 INDIAN WELLS CANYON
 Sample Date Time: 09/21/86 10:45

Lab No.: 86-GI/05089
 Date Received: 09/29/86

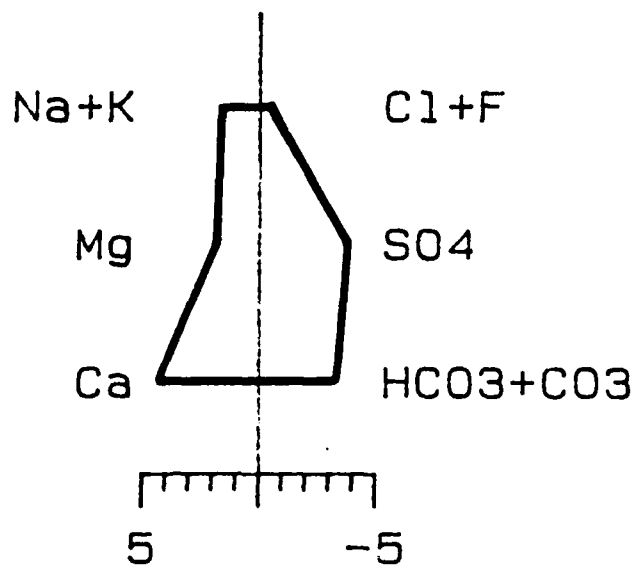
Parameters

Alkalinity as CaCO ₃	204.	mg/l
Bicarbonate as CaCO ₃	204.	mg/l
Boron, dissolved	.04	mg/l
Calcium, dissolved	82	mg/l
Carbonate as CaCO ₃	0.	mg/l
Chloride	16.	mg/l
Fluoride	.30	mg/l
Hardness as CaCO ₃	308.	mg/l
Magnesium, dissolved	22.	mg/l
pH (lab)	7.8	units
Potassium, dissolved	3.	mg/l
SAR in water	.88	
Silica, dissolved	34.6	mg/l
Sodium, dissolved	35	mg/l
Sulfate	185.	mg/l
Cations (sum)	222	meq/l
Anions (sum)	249	meq/l
Cation-Anion Balance	-1.40	%
Solids, total dissolved	188	mg/l
Arsenic, dissolved	.001	mg/l
Iron, dissolved	.02	mg/l

Remarks:

Ralph V. Poulsen
 Ralph V. Poulsen, Director

Note: Negative sign "-" denotes less than "0"



IWV-17 INDIAN WELLS CANYON

09-21-8

265/38E-7

WATER-QUALITY FIELD REPORT

Date 860921 Time 1150 Station ----- Project No. IWK

Station Name: IWK-18 (Chimney Peak Windmill)

Collected by: R. Baskin & D. Turner

Schedules: Schedule Nos. -----

Unique Nos -----

Lab Codes -----

Collection period: Monthly, Quarterly, Semiannually, Other -----

Collection point: At Wellhead

EWI, EDI, grab sample; If grab sample, explain: -----

No. of verticals -----, width of verticals -----, type of sampler -----

Field measurements

Discharge (meas. No. -----, rating, est.) Mean G. H. ----- cfs

Air temperature ----- °C

Water temperature 12 °C

Sp. Conductance (Meter type and No. Labline) 630 Micromhos at 25°C
calculations - if necessary - on back

pH (Meter type and No. Beckman pH21 % slope adj. -----) 7.09 units

Dissolved oxygen (Meter type and No. -----) ----- mg/L

Barometric pressure ----- mm/Hg

Calibration value ----- mg/L

Total coliform ----- colonies /100 mL

Fecal coliform ----- colonies /100 mL

Fecal streptococci ----- colonies /100 mL

Alkalinity: Carbonate ----- mg/L

Bicarbonate ----- mg/L

Observations and remarks Windmill across street from Chimney Peak BLM Center, water from leak above exit pipe

Client : Mr. R. Baskin
 Address : P.O. Box 81164
 Salt Lake City, UT 84108
 Attn. :
 P.O. No.:

Sample ID: IOW-18 CHIMNEY PEAK WINDMILL F.S. Lab No.: 86-01209090
 Sample Date Time: 09/21/86 11:50 Date Received: 09/29/86

Parameters

Alkalinity as CaCO ₃	222.	mg/l
Bicarbonate as CaCO ₃	222.	mg/l
Boron, dissolved	43	mg/l
Calcium, dissolved	64	mg/l
Carbonate as CaCO ₃	0	mg/l
Chloride	12	mg/l
Fluoride	20	mg/l
Hardness as CaCO ₃	264.	mg/l
Magnesium, dissolved	26.	mg/l
pH (lab)	7.6	units
Potassium, dissolved	4.	mg/l
SAR in water	1.16	
Silica, dissolved	36.0	mg/l
Sodium, dissolved	43	mg/l
Sulfate	64.	mg/l
Cations (sum)	208	mg/l
Anions (sum)	126	mg/l
Cation-Anion Balance	14	%
Solids, total dissolved	420	mg/l
Arsenic, dissolved	0.06	mg/l
Iron, dissolved	0.07	mg/l

Remarks:

Ralph U. Foulser
 Ralph U. Foulser, Director
 Note: Negative sign "-" denotes less than "0"

Client : Mr. Rob Baskin
Address : P.O. Box 81164
Salt Lake City, Utah 84108
Attn :
P.O. No.:

Sample ID: IMU-19 (IWV-19) 27S/36E-1C
Sample Date Time: 09/24/86 09:00

Lab No.: 87-WI/00374
Date Received: 02/02/87

Parameters

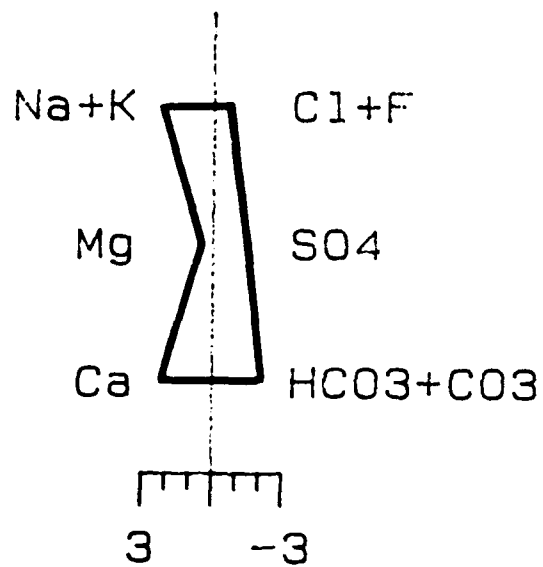
Alkalinity as CaCO3	130.	mg/l
Bicarbonate as CaCO3	130.	mg/l
Boron, dissolved	.17	mg/l
Calcium, dissolved	45.	mg/l
Carbonate as CaCO3	0.	mg/l
Chloride	24.	mg/l
Fluoride	.7	mg/l
Hardness as CaCO3	137.	mg/l
Magnesium, dissolved	6.	mg/l
pH (lab)	7.7	units
Potassium, dissolved	2.	mg/l
SAR in water	1.88	
Silica, dissolved	28.8	mg/l
Sodium, dissolved	50.	mg/l
Sulfate	72.	mg/l
Cations (sum)	4.99	meq/l
Anions (sum)	4.78	meq/l
Cation-Anion Balance	2.15	%
Solids, total dissolved	288.	mg/l
Arsenic, dissolved	.001	mg/l
Iron, dissolved	-.02	mg/l
Conductivity (Field)	492.	umhos/cm
pH (Field)	7.49	units
Temperature (Field)	26.	

Remarks:

Note: Negative sign "-" denotes that the value is less than "<".

Ralph U. Poulsen, Laboratory Director

Ralph U. Poulsen / S.H.

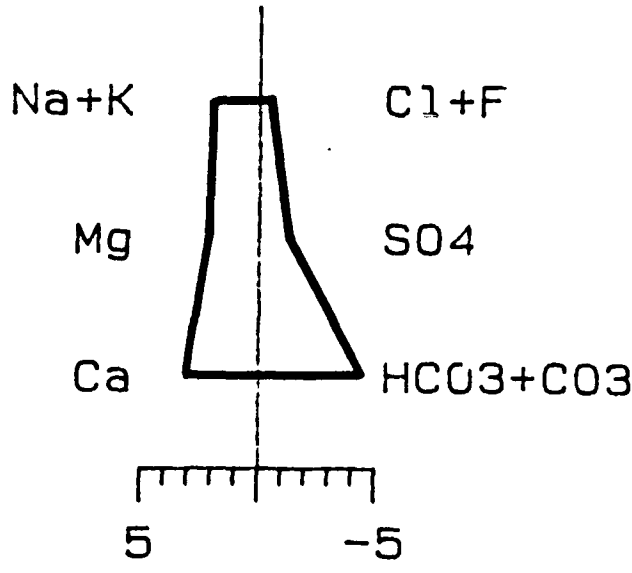


IWV-19

09-24-86

27S/38E-1C

29



IWV-18 CHIMNEY PEAK WINDMILL

09-21

WATER-QUALITY FIELD REPORT

Date 8 6 2 9 2 1 Time 1 2 5 5 Station _____ Project No. IWV

Station Name: IWV-20 (Chumney Peak Meadows)

Collected by: R. Baskin & D. Turner

Schedules: Schedule Nos. _____

Unique Nos. _____

Lab Codes _____

Collection period: Monthly, Quarterly, Semiannually, Other _____

Collection point: Surface Water ab Pond

EWI, EDI, grab sample; If grab sample, explain: _____

No. of verticals _____, width of verticals _____, type of sampler _____

Field measurements

Discharge (meas. No. _____, rating, est.) Mean G. H. _____ cfs

Air temperature _____ °C

Water temperature 12 °C

Sp. Conductance (Meter type and No. Labline) 920 Micromhos at 25°C
calculations - if necessary - on back

pH (Meter type and No. Beckman pH21 % slope adj. _____) 8.13 units

Dissolved oxygen (Meter type and No. _____) _____ mg/L

Barometric pressure _____ mm/Hg

Calibration value _____ mg/L

Total coliform _____ colonies /100 mL

Fecal coliform _____ colonies /100 mL

Fecal streptococci _____ colonies /100 mL

Alkalinity: Carbonate _____ mg/L

Bicarbonate _____ mg/L

Observations and remarks Q ≈ 15 GPM. Water from large seep area at lower end of meadow, Run into Pond.

Client : Mr. R. Baskin
 Address : P.O. Box 81164
 Salt Lake City, UT 84108
 Attn. :
 P.O. No.:

Sample ID: IWU-20 CHIMNEY PEAK MEADOWS
 Sample Date Time: 09/21/86 12:55

Lab No.: 86-WI/05088
 Date Received: 09/29/86

Parameters

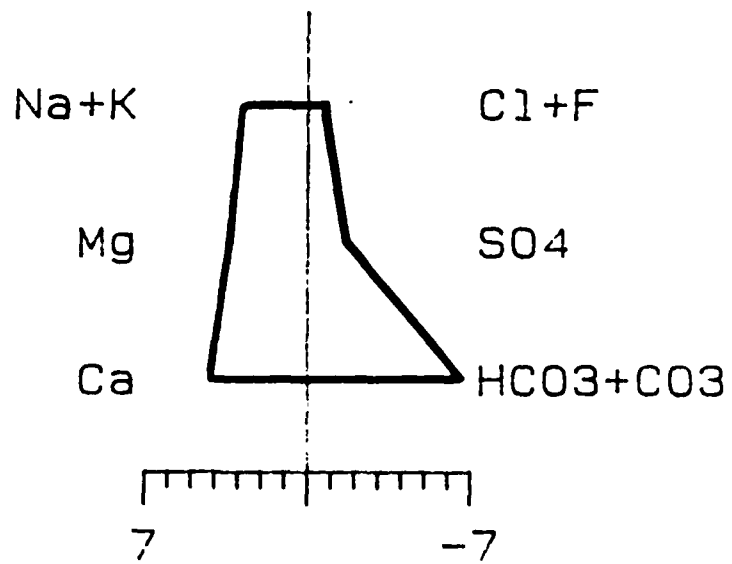
Alkalinity as CaCO ₃	406.	mg/l
Bicarbonate as CaCO ₃	406.	mg/l
Boron, dissolved	.09	mg/l
Calcium, dissolved	85.	mg/l
Carbonate as CaCO ₃	0.	mg/l
Chloride	25.	mg/l
Fluoride	.50	mg/l
Hardness as CaCO ₃	381.	mg/l
Magnesium, dissolved	41.	mg/l
pH (lab)	8.3	units
Potassium, dissolved	1.	mg/l
SAR in water	1.44	
Silica, dissolved	24.5	mg/l
Sodium, dissolved	64.	mg/l
Sulfate	80	mg/l
Cations (sum)	10.45	meq/l
Anions (sum)	10.50	meq/l
Cation-Anion Balance	-.24	%
Solids, total dissolved	948	mg/l
Arsenic, dissolved	-.001	mg/l
Iron, dissolved	-.02	mg/l

Remarks:

Ralph U. Poulsen

Ralph U. Poulsen, Director

Note: Negative sign "-" denotes less than "0".



IWV-20 CHIMNEY PEAK MEADOWS

09-21-

WATER-QUALITY FIELD REPORT

Date 8 6 29 Y M D Time 1345 Station _____ Project No. IWV

Station Name: IWV-21 (Top of 1 mile Drainage)

Collected by: R. Baskin & D. Turner

Schedules: Schedule Nos. _____

Unique Nos. _____

Lab Codes _____

Collection period: Monthly, Quarterly, Semiannually, Other _____

Collection point: ≈ 50' below seep (spring) area

EWI, EDI, grab sample; If grab sample, explain: _____

No. of verticals _____, width of verticals _____, type of sampler _____

Field measurements

Discharge (meas. No. _____, rating, est.) Mean G. H. _____ cfs

Air temperature _____ °C

Water temperature 16° °C

Sp. Conductance (Meter type and No. Labline) 720 Micromhos at 25°C

pH (Meter type and No. Beckman pH21 % slope adj. _____) 8.34 units

Dissolved oxygen (Meter type and No. _____) _____ mg/L

Barometric pressure _____ mm/Hg

Calibration value _____ mg/L

Total coliform _____ colonies /100 mL

Fecal coliform _____ colonies /100 mL

Fecal streptococci _____ colonies /100 mL

Alkalinity: Carbonate _____ mg/L

Bicarbonates _____ mg/L

Observations and remarks Water from Bedrock @ Top of canyon
Q ≈ 5 cfs

Client : Mr. R. Baskin
 Address : P.O. Box 81164
 Salt Lake City, UT 84108
 Attn. :
 P.O. No.:

Sample ID: IMU-21 TOP NINEMILE CYN. DRAINAGE
 Sample Date Time: 09/21/86 13:45

Lab No.: 86-WJ/05092
 Date Received: 09/29/86

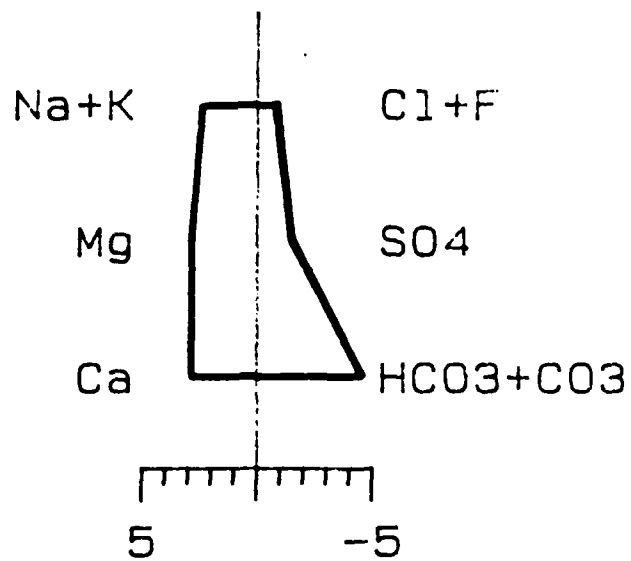
Parameters

Alkalinity as CaCO ₃	274.	mg/l
Bicarbonate as CaCO ₃	266.	mg/l
Boron, dissolved	.10	mg/l
Calcium, dissolved	58.	mg/l
Carbonate as CaCO ₃	8.	mg/l
Chloride	29.	mg/l
Fluoride	.30	mg/l
Hardness as CaCO ₃	289.	mg/l
Magnesium, dissolved	35.	mg/l
pH (lab)	8.4	units
Potassium, dissolved	4.	mg/l
SAR in water	1.37	
Silica, dissolved	21.0	mg/l
Sodium, dissolved	53.	mg/l
Sulfate	74.	mg/l
Cations (sum)	8.21	meq/l
Anions (sum)	7.85	meq/l
Cation-Anion Balance	2.24	%
Solids, total dissolved	420.	mg/l
Arsenic, dissolved	-.001	mg/l
Iron, dissolved	-.02	mg/l

Remarks:

Ralph V. Poulsen
 Ralph V. Poulsen, Director

Note: Negative sign "-" denotes less than "<".



IWV-21 TOP NINEMILE CANYON DRAINAGE

Client : Mr. Rob Baskin
 Address : P.O. Box 81164
 Salt Lake City, Utah 84108
 Attn :
 P.O. No :

Sample ID: IMU-22 (IWV-22) *215/371-182*
 Sample Date Time: 03/23/86 14:40

Lab No.: 82-011/00375
 Date Received: 02/02/87

Parameters

Alkalinity as CaCO ₃	104.	mg/l
Bicarbonate as CaCO ₃	104.	mg/l
Boron, dissolved	.35	mg/l
Calcium, dissolved	31.	mg/l
Carbonate as CaCO ₃	0.	mg/l
Chloride	29.	mg/l
Fluoride	.6	mg/l
Hardness as CaCO ₃	102.	mg/l
Magnesium, dissolved	6.	mg/l
pH (lab)	7.6	units
Potassium, dissolved	4.	mg/l
SAR in water	1.92	
Silica, dissolved	29.2	mg/l
Sodium, dissolved	44.	mg/l
Sulfate	45.	mg/l
Cations (sum)	4.08	meq/l
Anions (sum)	3.84	meq/l
Cation-Anion Balance	3.03	%
Solids, total dissolved	268.	mg/l
Arsenic, dissolved	.005	mg/l
Iron, dissolved	.05	mg/l
Conductivity (Field)	435.	umhos/cm
pH (Field)	7.09	units
Temperature (Field)	28.	

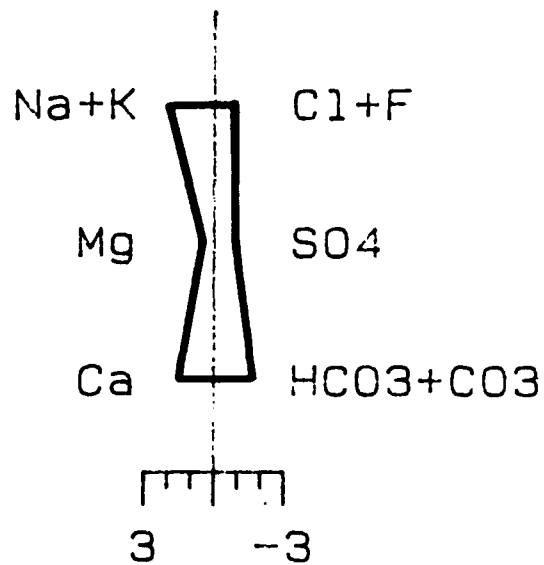
Remarks:

Note: Negative sign "-" denotes that the value is less than "<".

Ralph U. Poulsen, Laboratory Director

Ralph V. Poulsen / S.H.

78



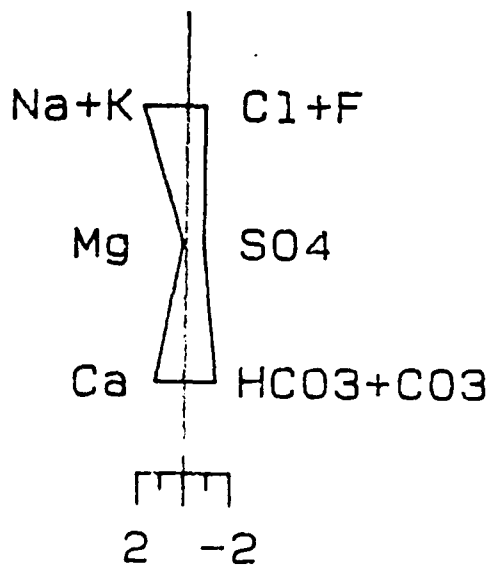
IWV-22

27S/39E-18D

01-87 1440

Depth 1015 ft
Perf 980 to 600 ft

(51)



SUBSTATION WELL 8-17-84

26S/38E-21N

NAVY PRODUCTION WELL ONE AT
SUBSTATION AT INYOKERN 265138E-21N

TOTAL DEPTH 1015-FT
DRILLED HOLE 28-INCHES
CASING TO 920 FT
16-INCHES ID
PERFORATED 600-FT-900FT
GRAVEL PACKED TO T.D.
STATIC WATER LEVEL 230-FT
DRAWDOWN AT 2200 GPM 48-FT
SPECIFIC YIELD 32.35

TEMPERATURE °C 30
ELECTRICAL CONDUCTIVITY 340
PH 7.5
TOTAL HARDNESS AS CaCO_3 67
NON CARBONATE HARDNESS NONE
TOTAL ALKALINITY AS CaCO_3 70
BICARBONATE 85
CARBONATE NONE
HYDROXIDE NONE
CALCIUM 25
MAGNESIUM 1
SODIUM 42
POTASSIUM 1
SULFATE 39
CHLORIDE 27

NITRATE	8
CARBON DIOXIDE	4.5
ARSENIC	0.01
MERCURY	- 0.001
BARIUM	- 0.5
FLUORIDE	0.7
DISSOLVED SULFIDE	- 0.05
IRON	0.07
SELENIUM	- 0.005
CADMIUM	- 0.005
LEAD	- 0.01
SILICA	25
DISSOLVED OXYGEN	7.0
CHROMIUM	- 0.01
MANGANESE	- 0.01
TOTAL DISSOLVED RESIDUE @ 160°C	215
COLOR	- 5 UNITS
TURBIDITY	0.20 NTU

ANALYZED BY EDWARD S. BABCOCK & SONS
 INC. ~~CORP.~~, FOR BEYLIE DRILLING, INC.
 UNDER NAVY CONTRACT.



LABORATORIES, INC.

J. J. EGLIN, REG. CHEM. ENGR.

4100 PIERCE RD., BAKERSFIELD, CALIFORNIA 93308 PHONE 327-4911

Date Reported: 09/29/87

Date Received: 09/22/87

Laboratory No.: 19740

Req. #NG0530-7261-8001

WATER ANALYSIS

Sample Description: 43E/17S-23D

Sampled by: Whelan

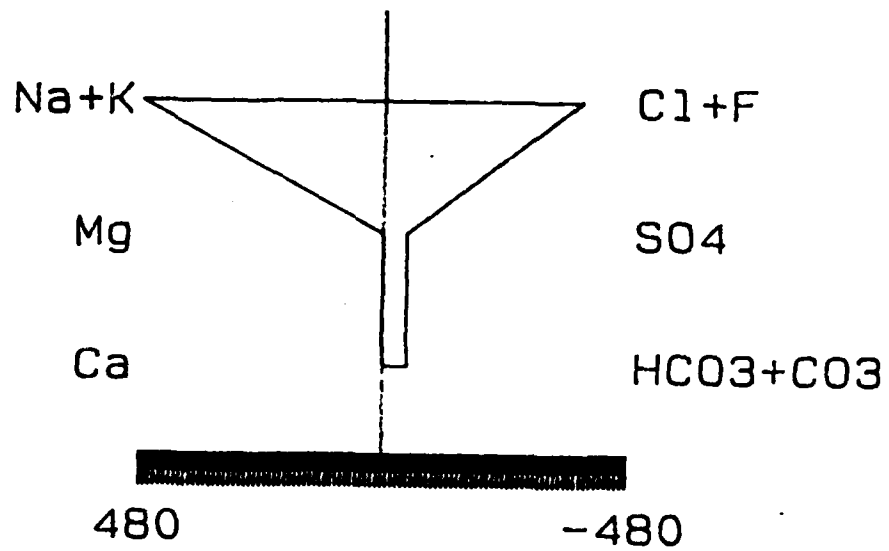
<u>Constituents</u>	<u>mg/liter</u>
Calcium	4.2
Magnesium	4.1
Sodium	10,850.
Potassium	317.
Hydroxide	0.
Carbonate	773.
Bicarbonate	1,414.
Chloride	13,735.
Sulfate	2,240.
Nitrate	5.8
Fluoride	8.5
Iron	(-) 0.05
Manganese	(-) 0.01
Arsenic	1.16
Copper	(-) 0.01
Zinc	(-) 0.01
Total Dissolved Solids @ 105 C	29,450.
Mercury	(-) 0.0002
Aluminum	(-) 0.5
Boron	92.6
Silica	14.
Ammonium	11.8
Lithium	3.1
Bromide	16.0
Phosphate	0.6
Salinity as NaCl	21,802.
pH	9.3
Electrical Conductivity, micromhos	37,330.

(-) refers to "less than"

B C LABORATORIES, INC.

E-70

BY *J. J. Eglin*



43E/17S-23D

Appendix F

DATA REGARDING COMPUTER PRINTOUTS

Computer printouts and maps described in this appendix are available for perusal at the Geothermal Program Office, NWC.

MAPS AND DIAGRAMS AVAILABLE

Computer-generated contour maps of sulfate, pH, boron and TDS were prepared by the Utah State Geographic Office.

Computer printouts of modified Stiff diagrams and Piper diagrams were prepared by NWC.

USGS GROUNDWATER ANALYSES

This appendix contains information about the computer printouts of all the USGS complete and partial groundwater analyses done through 1987. These analyses include Rose Valley, the Coso Range, Indian Wells Valley, the Argus Range, and Salt Wells. Data are arranged by township and range, section and 16th section, starting in the north and going east in each township. These analyses constitute one of the basic data sets for this report and should be useful to future researchers.

Water Type. For each complete USGS analysis, the water type category gives chemical classification of the water. Cations and anions that make up at least 20% of the positive or negative share respectively are listed in descending order. Thus a water might be listed as a sodium-chloride type, a sodium-calcium-chloride type, or a calcium-sodium-magnesium-bicarbonate-chloride-sulfate water.

Final 2 PRT. This category is a tabular listing of station ID by township and range (as described above) giving date of sampling, temperature, alkalinity, arsenic, cadmium, lithium, barium, TDS measured, silicon dioxide, and depth when these data are available.

ROB—Depth Table. This category lists wells by township and range; latitude and longitude; dates sampled; depth of well, if available; and sampling depth, if available.

ROB—Big Stiff. This category lists and sums meq/L of the major cations and anions and the percent difference, which is a measure of quality of the analysis. Unfortunately, sample locations are by latitude and longitude. To find a well located by the Federal land survey system, the conversion charge (Site File 2, described below) must be used.

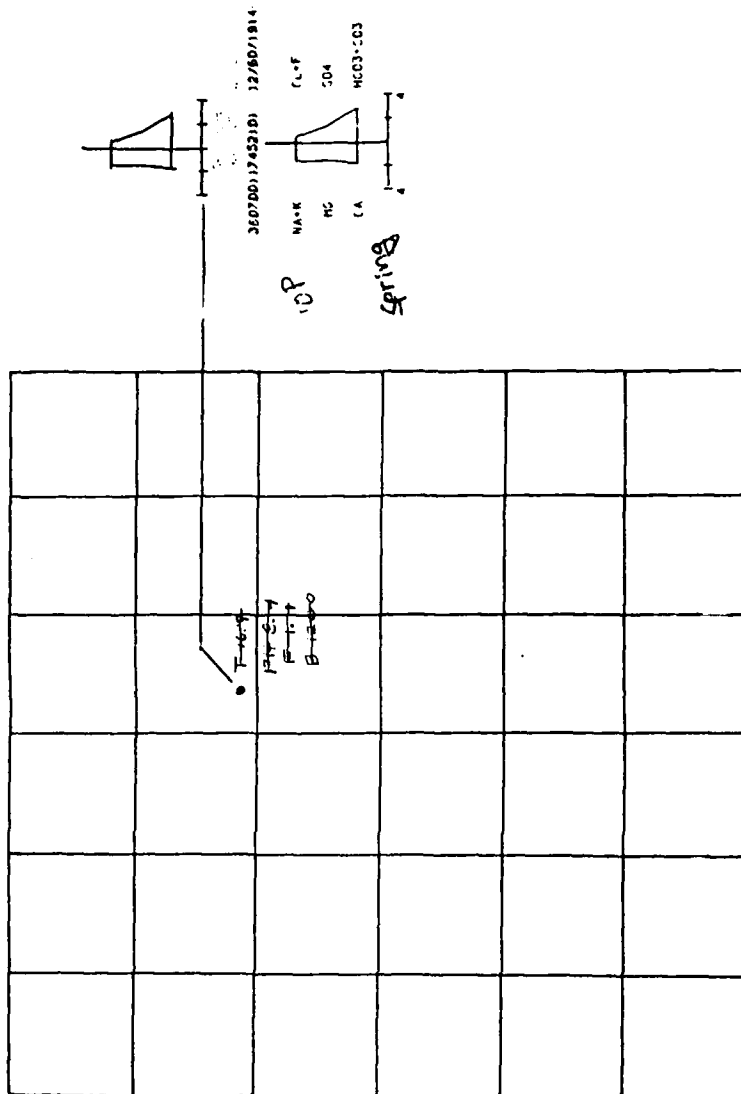
Site File 2. This entry converts locations between latitude and longitude and the Federal land survey.

Appendix G
MODIFIED STIFF DIAGRAMS

This appendix contains modified Stiff diagrams plotted by township, range, section, and quarter section.

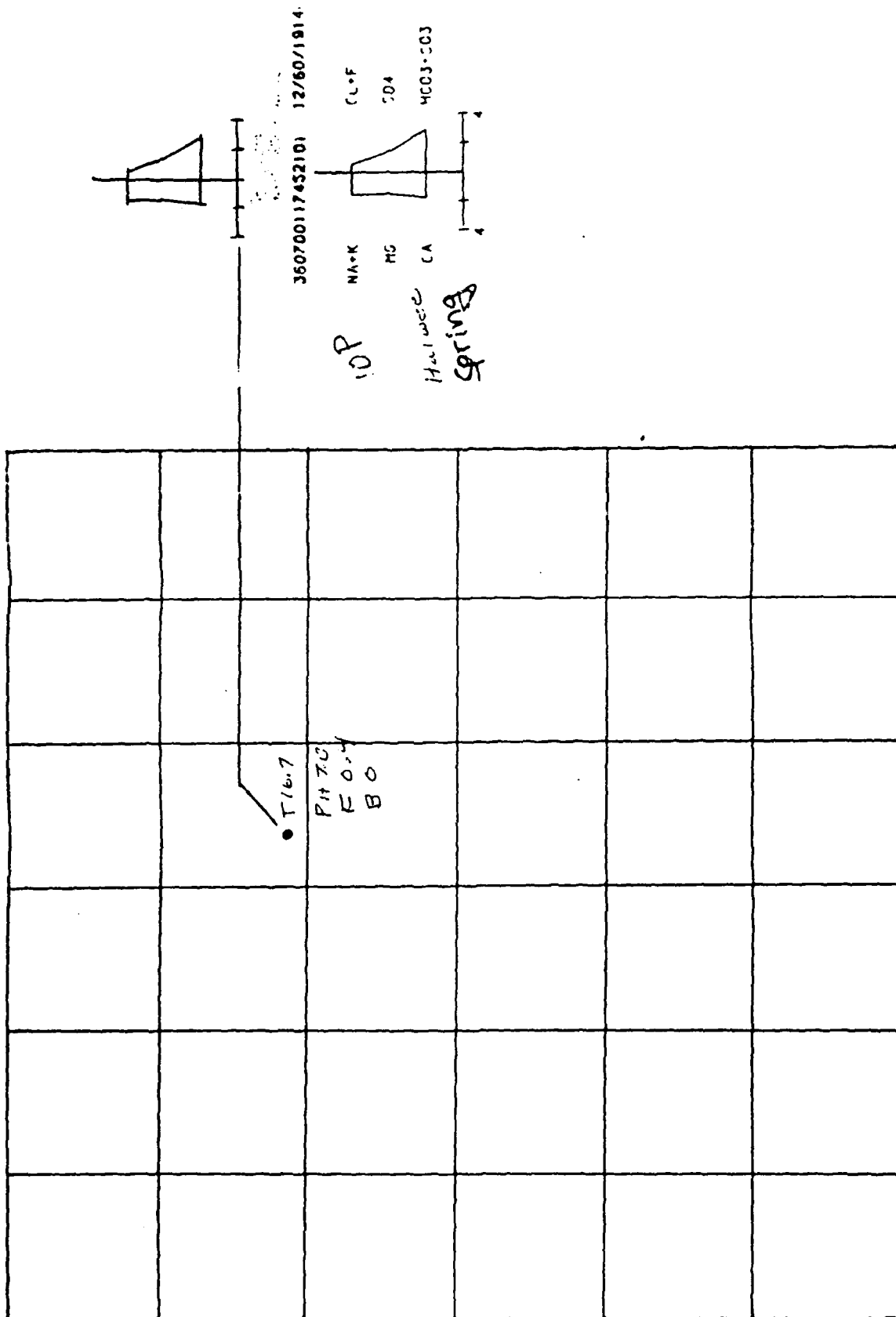
T215, R. 39E.

NWC TP 7019, Volume II



215 39E 10P51M

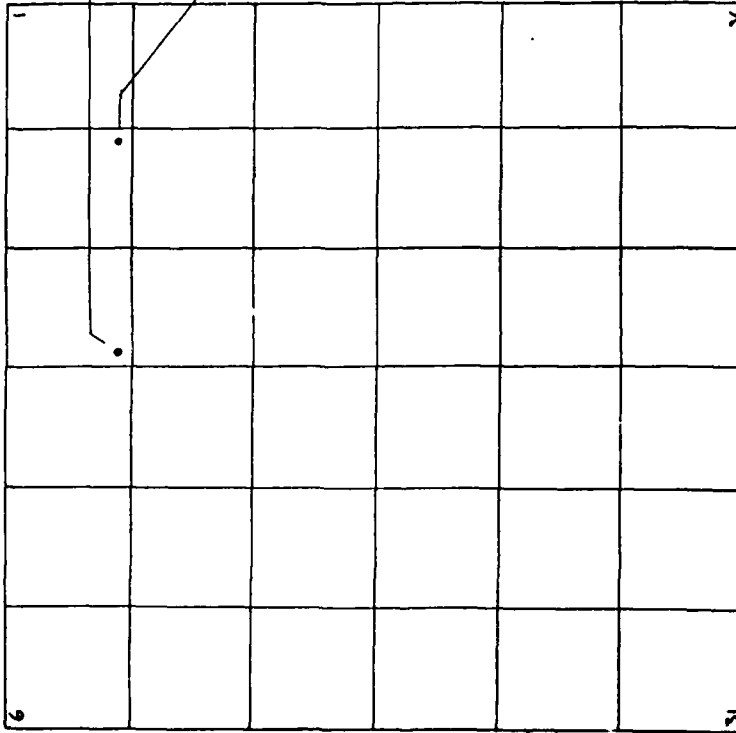
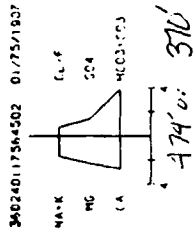
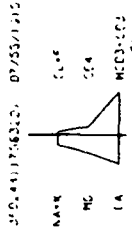
NWC TP 7019, Volume II



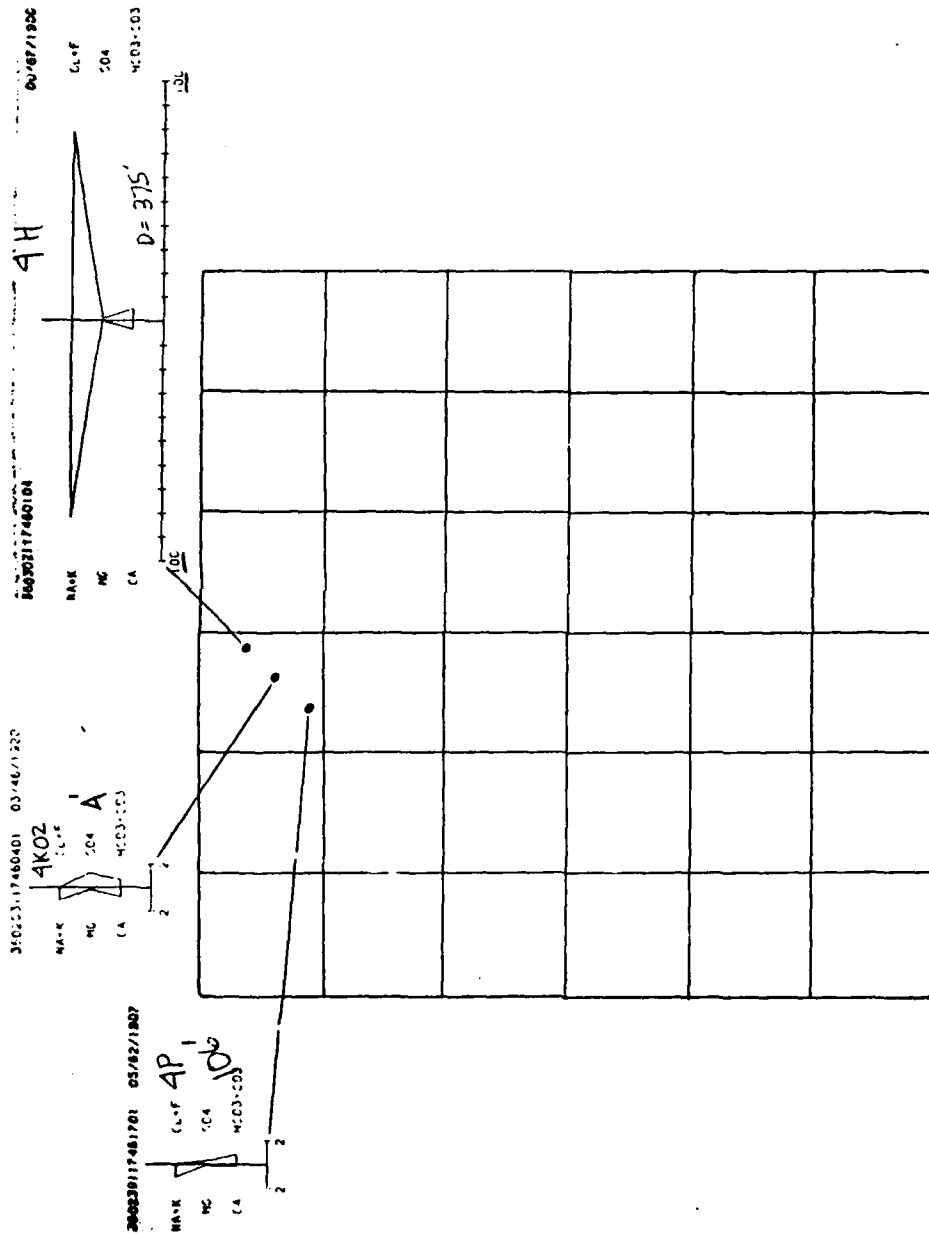
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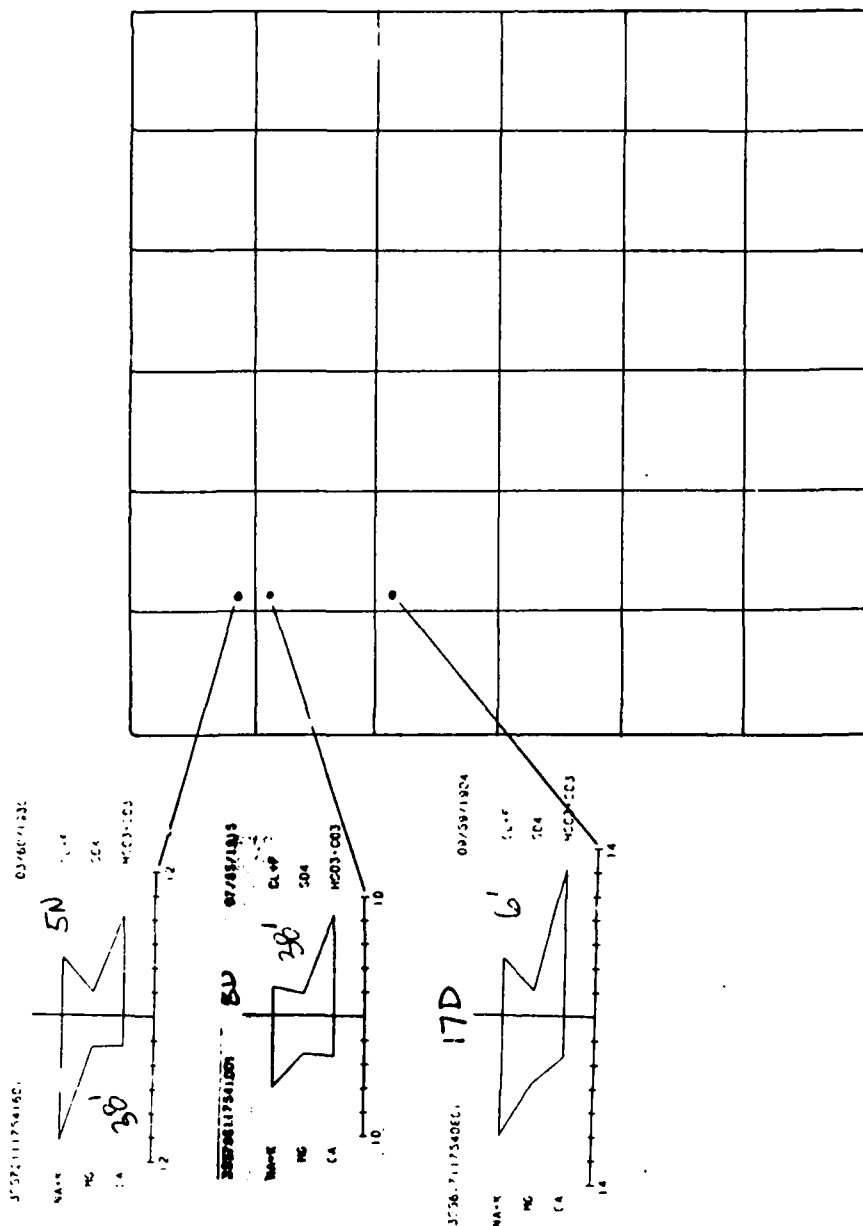
3N



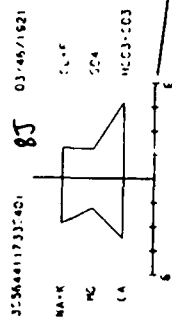
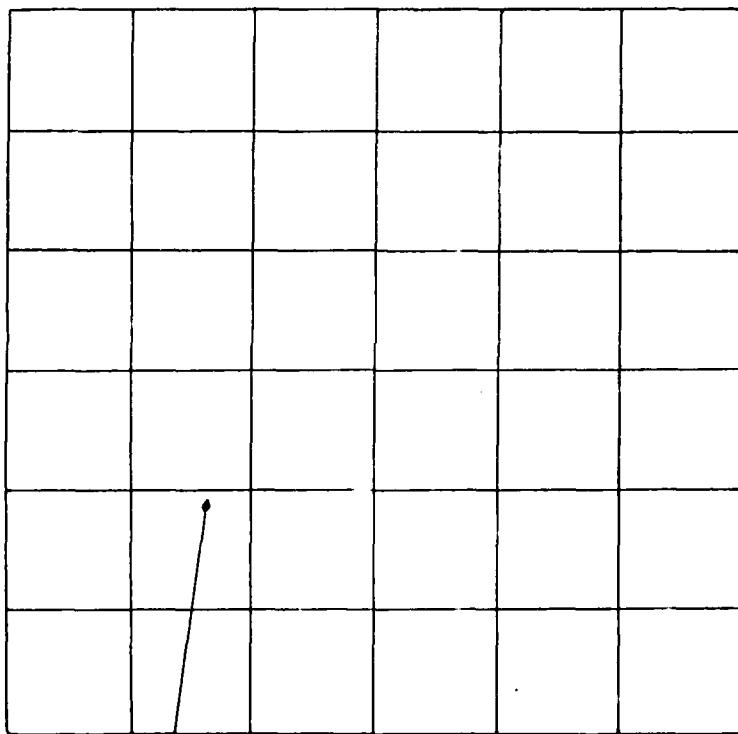
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T.23S., R.38E.

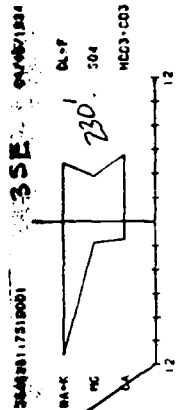
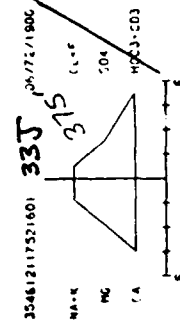
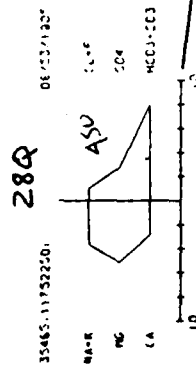
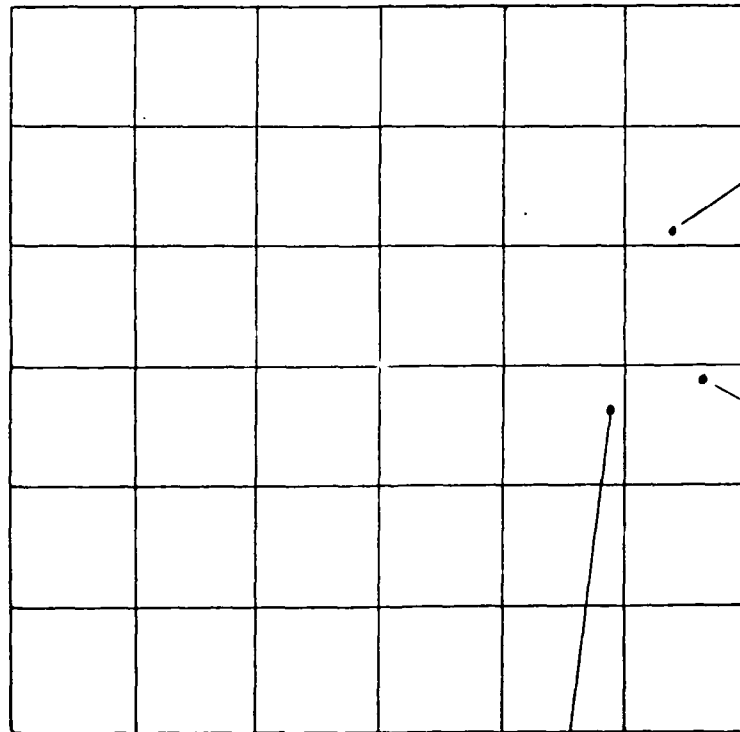


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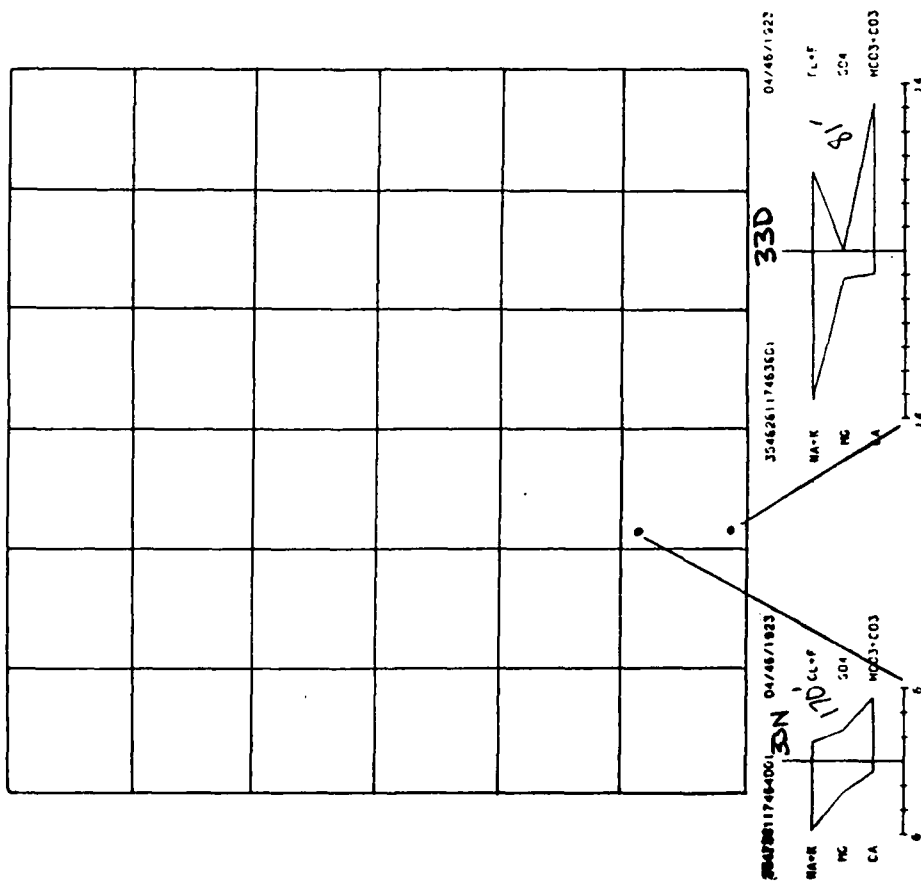
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NWC TP 7019, Volume II



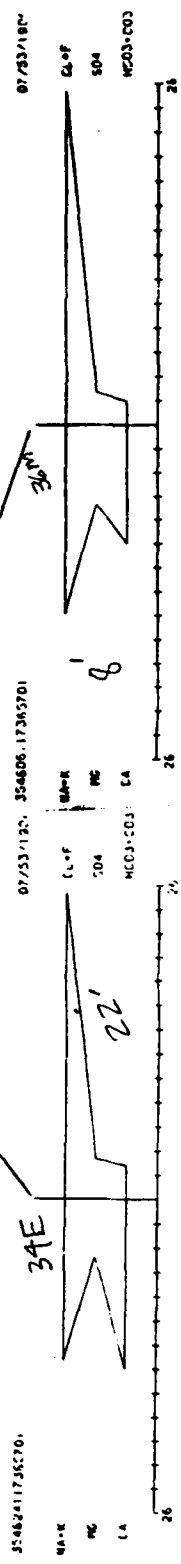
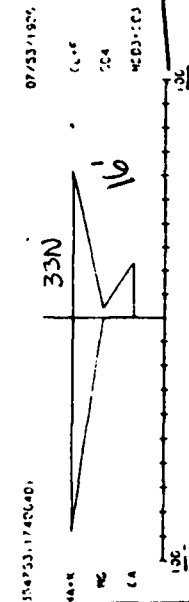
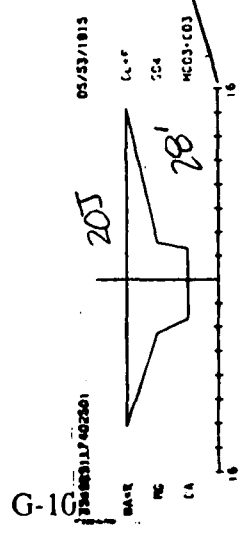
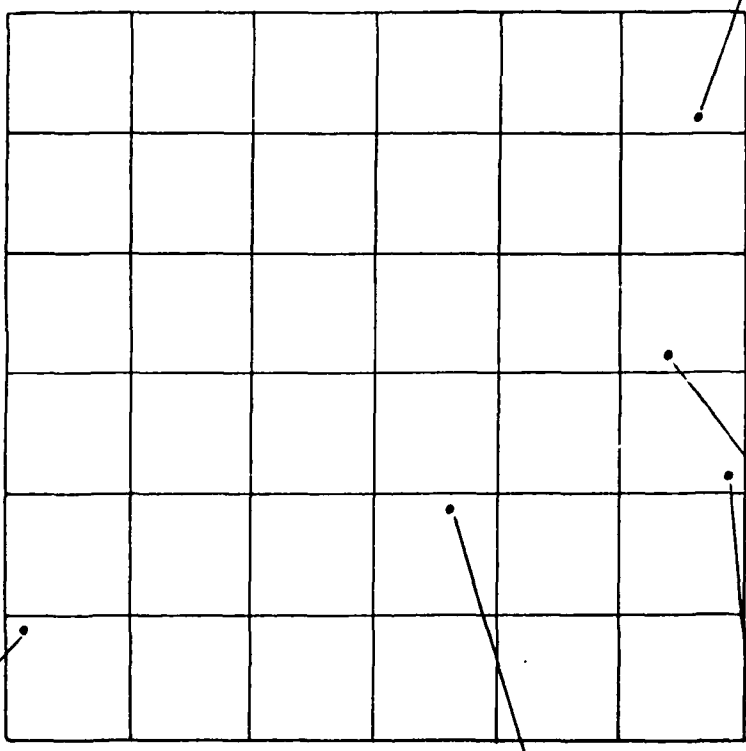
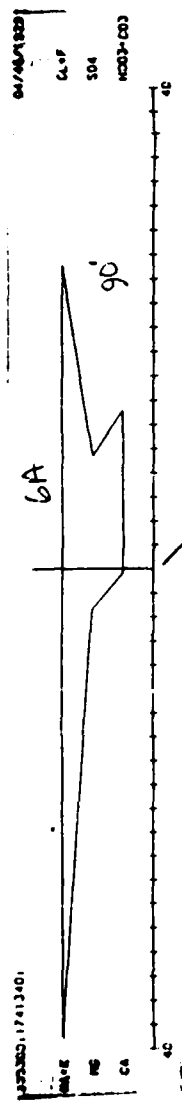
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NWC TP 7019, Volume II



T.29S, R.40E.

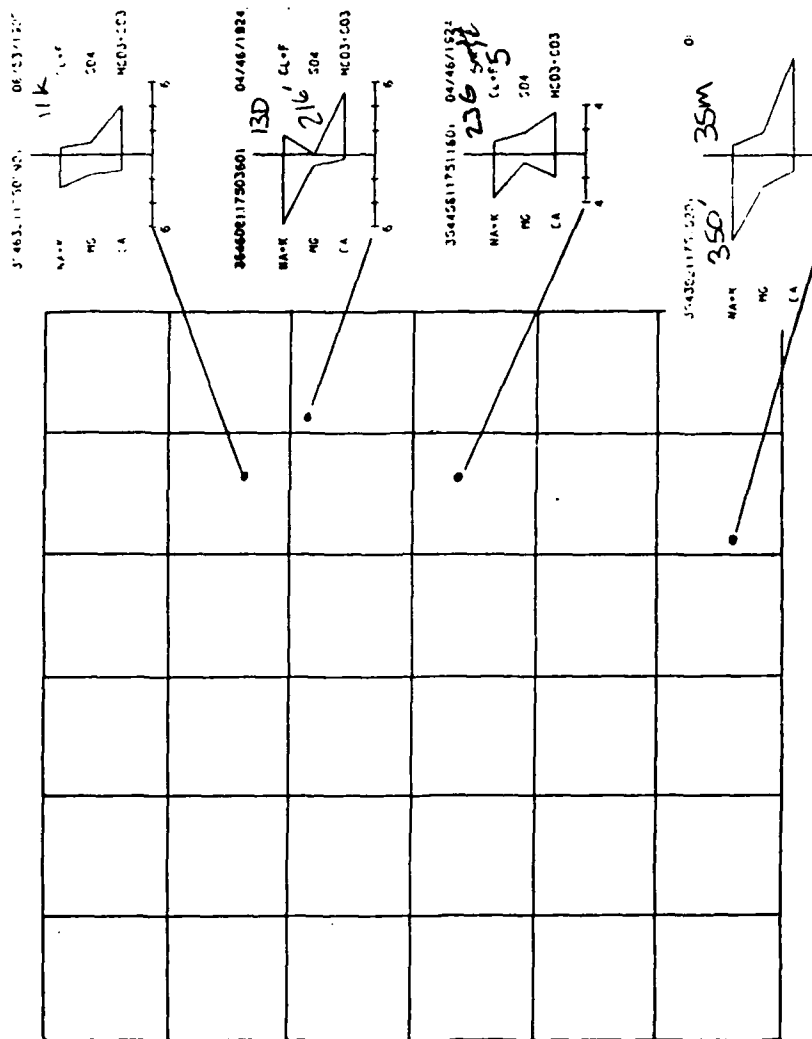
NWC TP 7019, Volume II



G-16

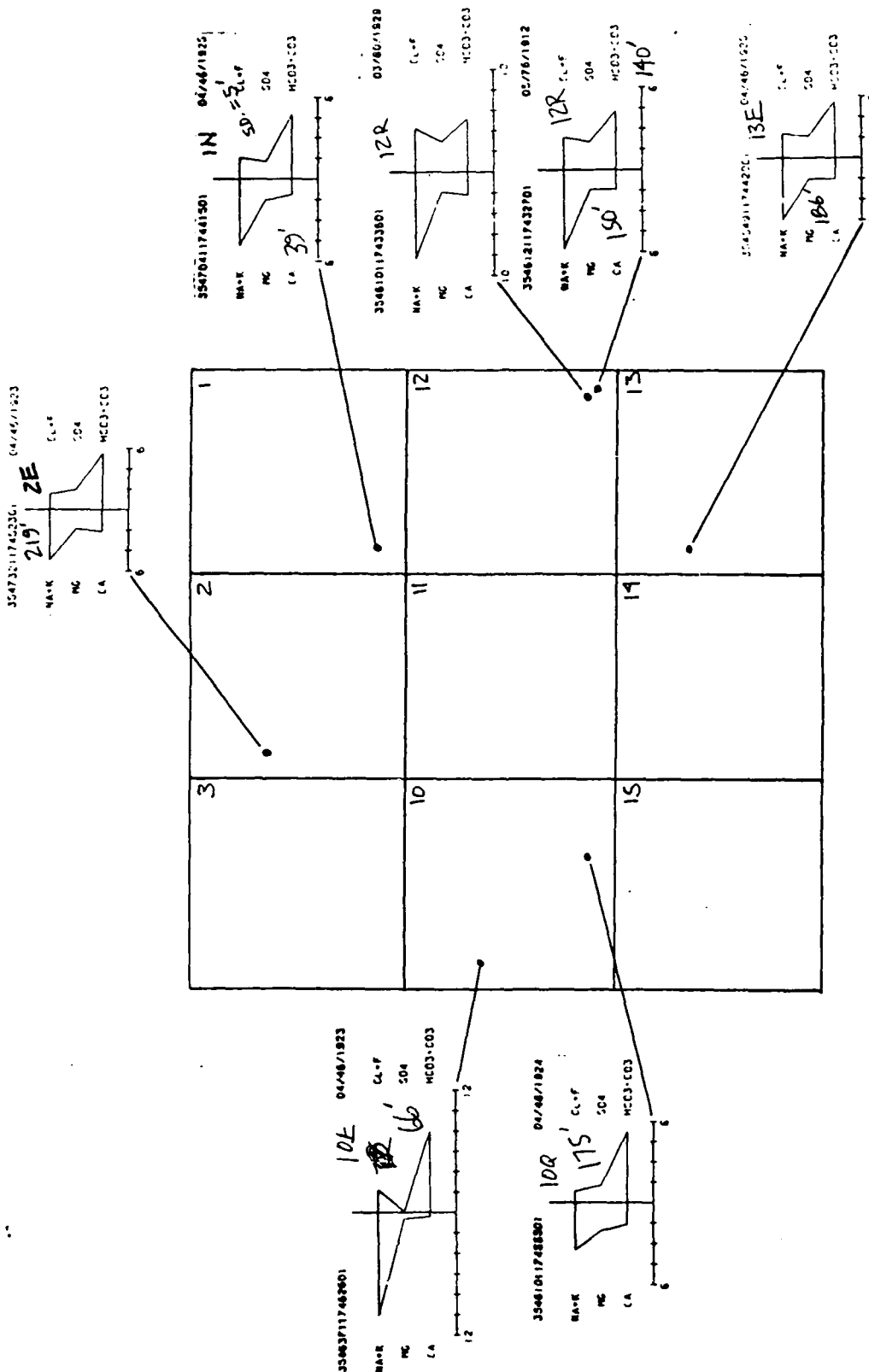
T.25S, R.38E.

NWC TP 7019, Volume II





NE 1/4, T.25S., R.39E.



25S.40E.

NWC TP 7019, Volume II

05/43/1812

CL-F

204

WCD3-C03

35420117375101

BA-E

PG

CA

03/80/1820

CL-F

204

WCD3-C03

3N

BA-E

PG

CA

3545511741201

BA-E

PG

CA

06/76/1820

CL-F

204

WCD3-C03

8A

193'

3545211742201

BA-E

PG

CA

06/76/1821

CL-F

204

WCD3-C0

18R

22-50.5

354450117415301

BA-E

PG

CA

06/76/1820

CL-F

204

WCD3-C03

20F

183'

35432117361801

BA-E

PG

CA

07/83/1808

CL-F

204

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31C

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BA-E

PG

CA

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CA

06/76/1821

CL-F

204

WCD3-C03

06/76/1821

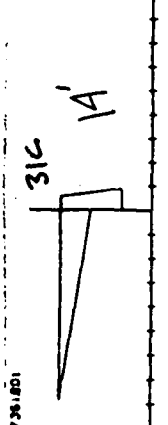
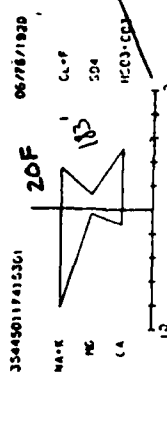
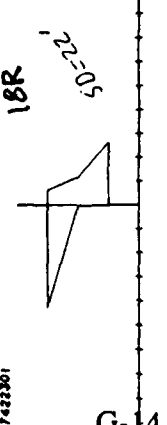
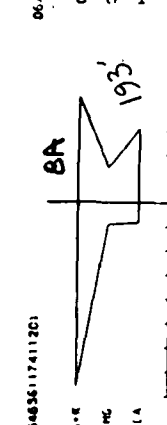
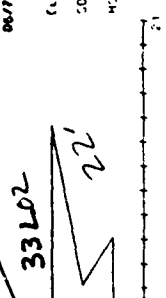
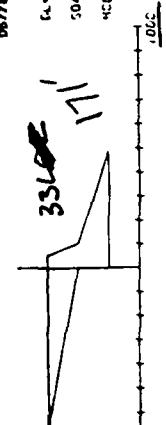
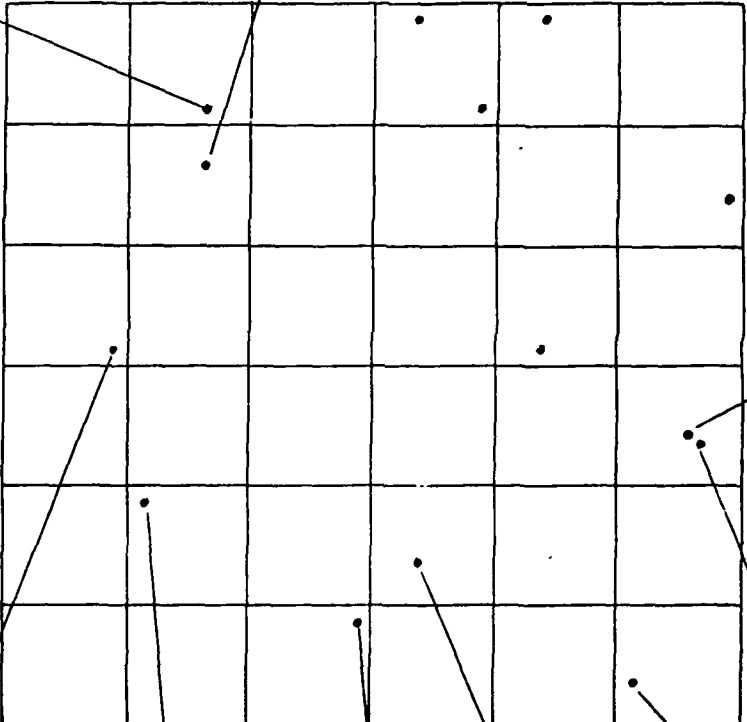
CL-F

204

WCD3-C03

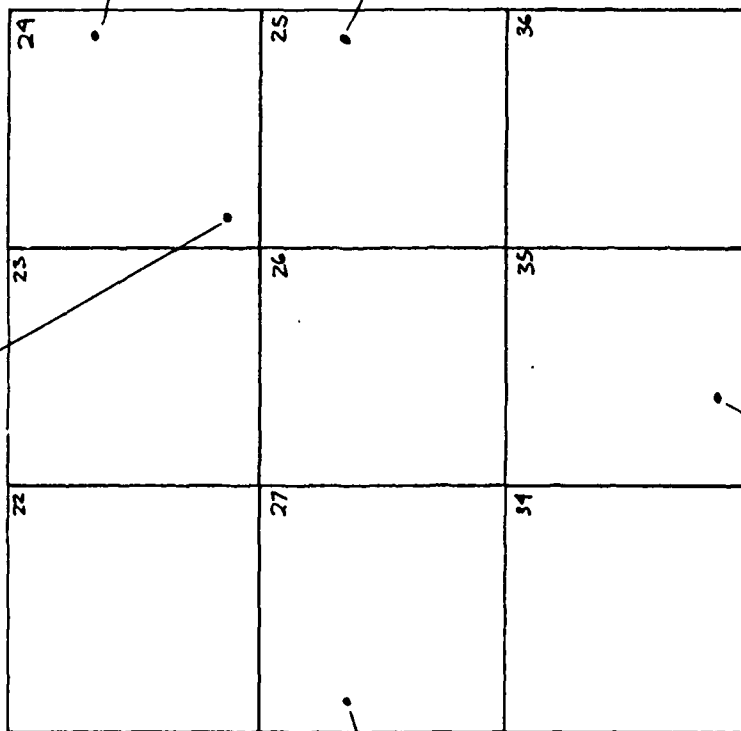
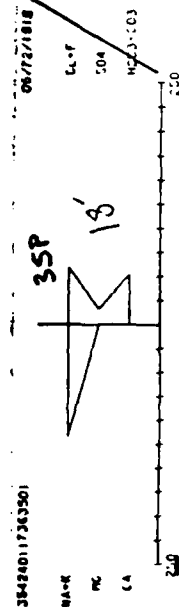
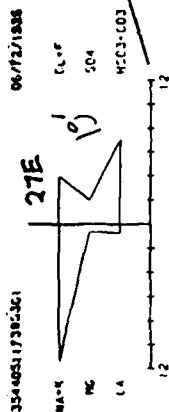
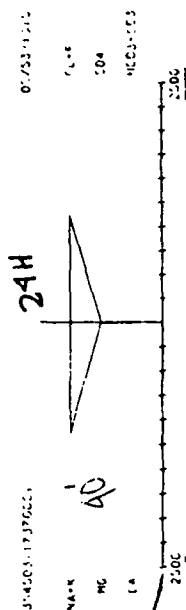
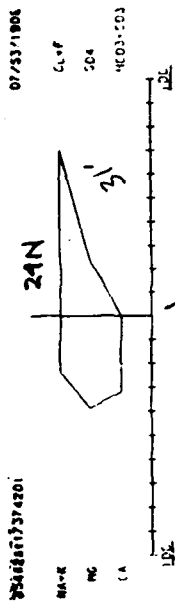
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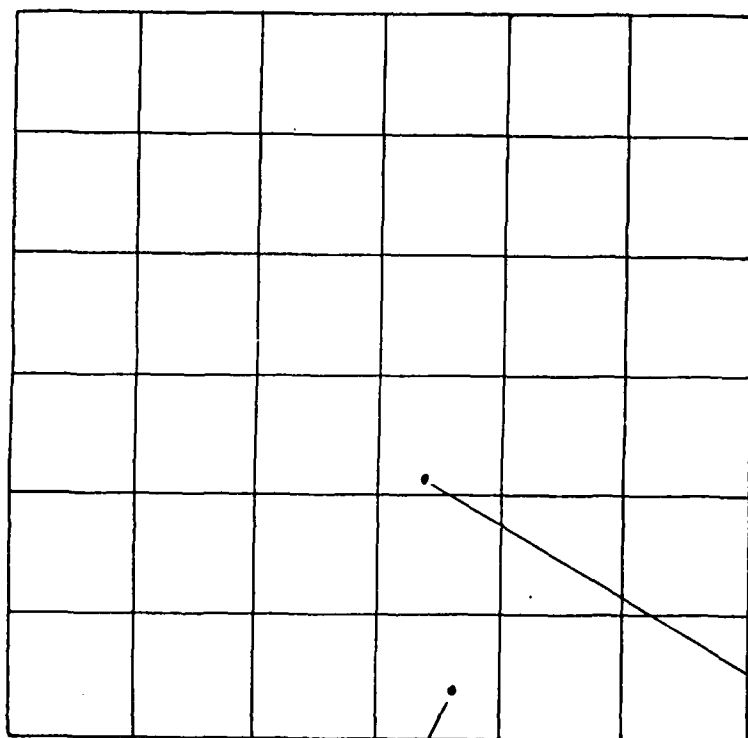


SEA T. 25 S. R. 40 E.

NW C TP 7019, Volume II



T.25S.,R.91E.



07/53/1800



CL-F

204

MCD3-C03

G-16

07/76/1831

CL-F

204

MCD3-C03

21E

188'

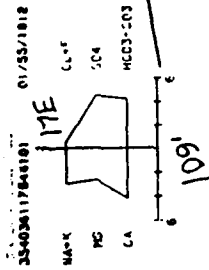
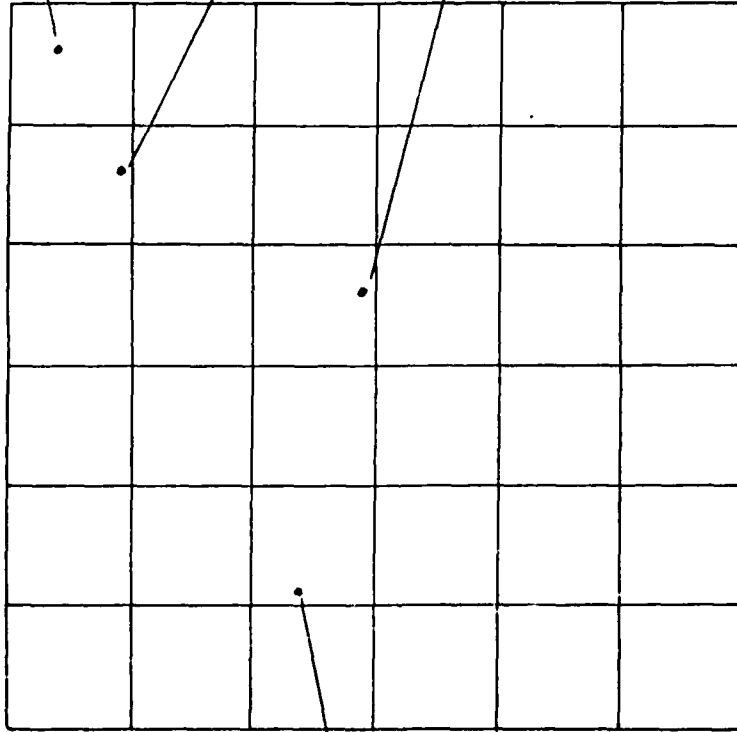
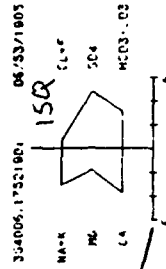
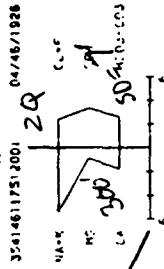
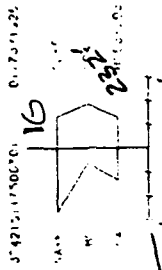
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CL-F

204

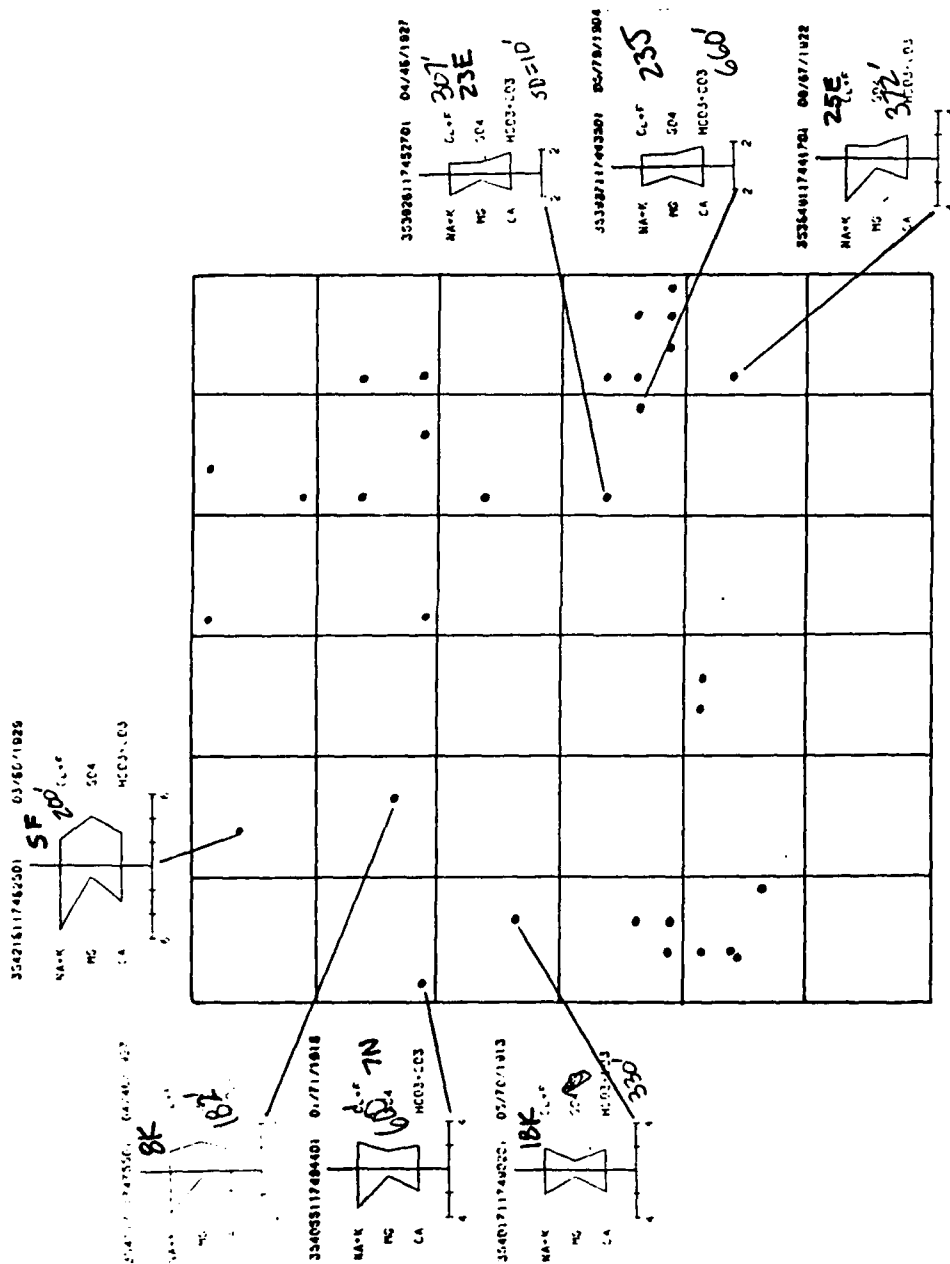
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T.26S,R.38E.



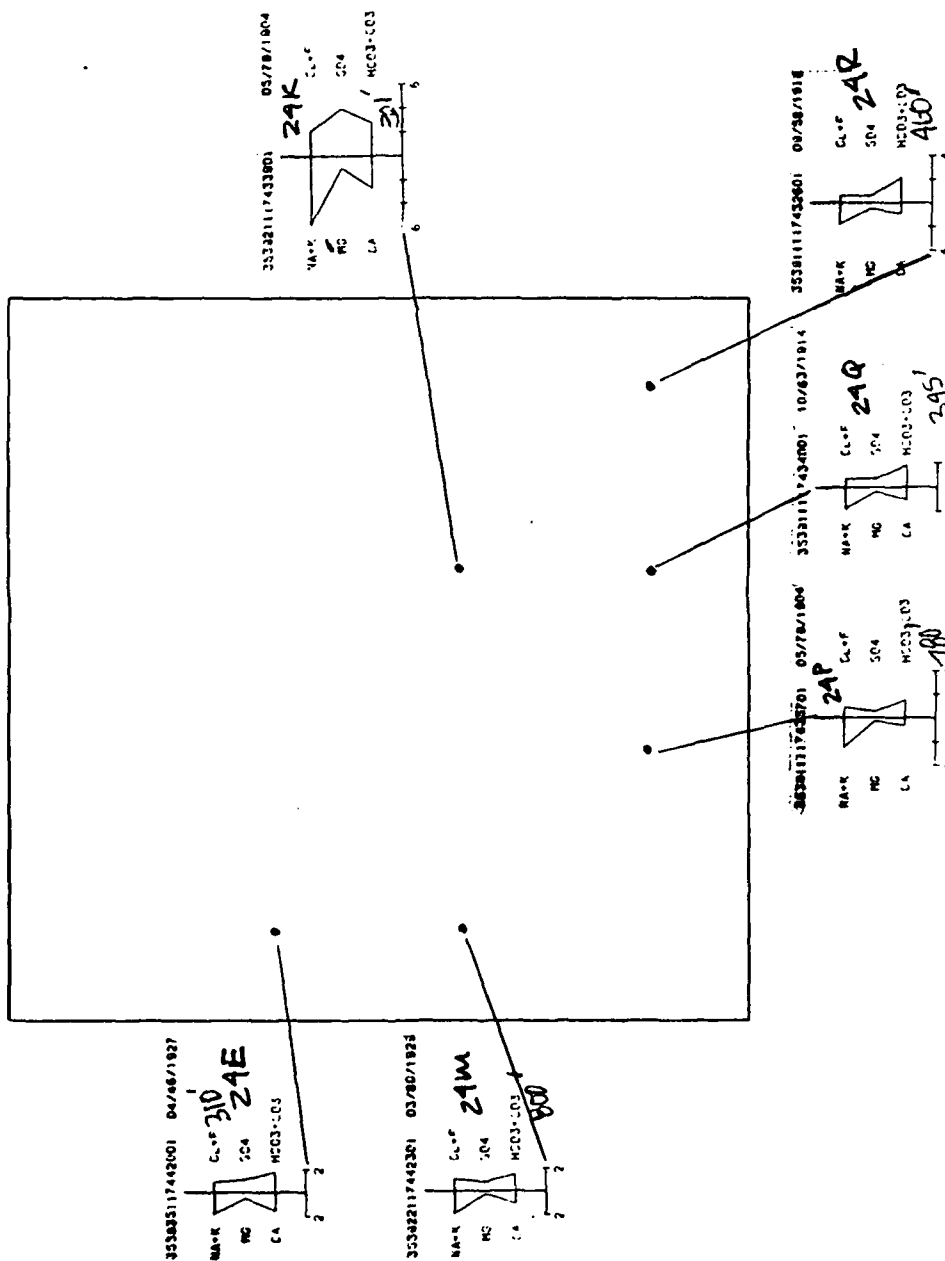
T.26.S., R.39E.

NWC TP 7019, Volume II



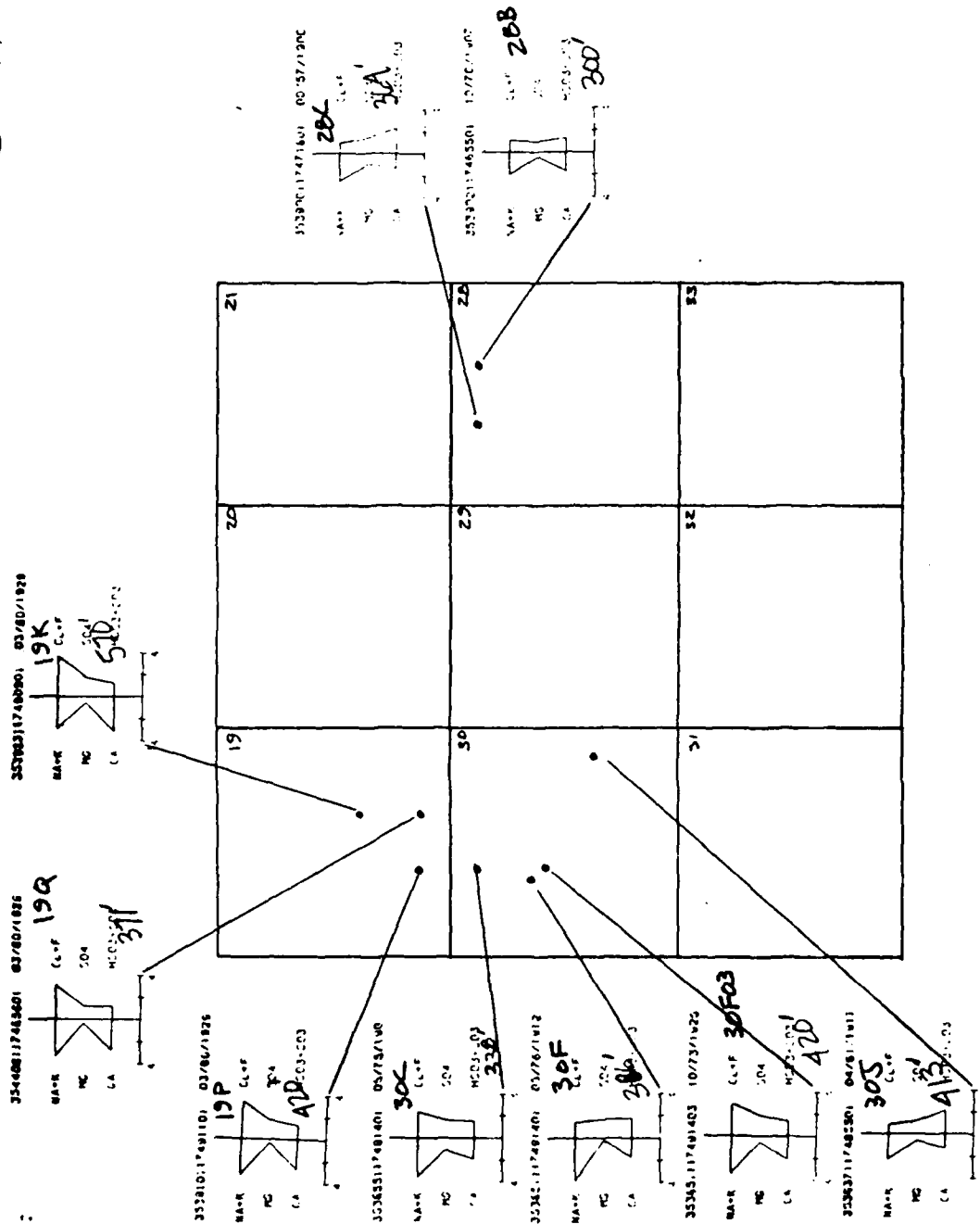
Sec 24, T26 S., R.39 E.

NWC TP 7019, Volume II

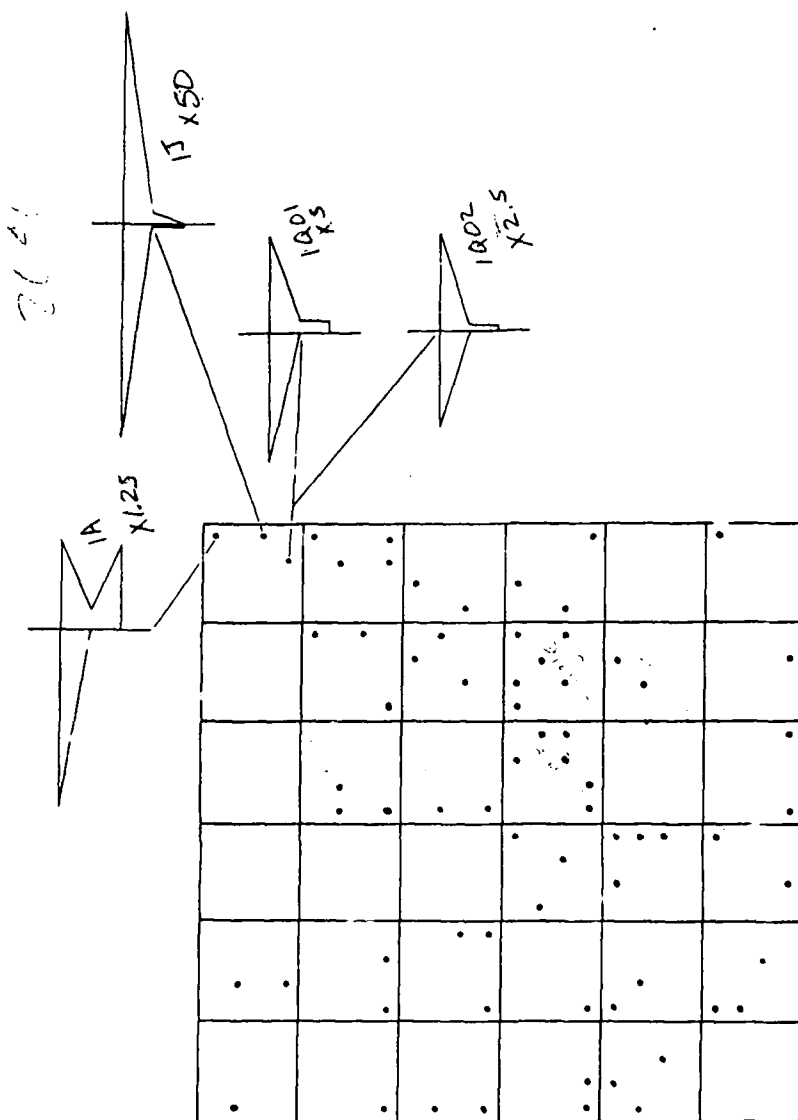




SW4, T. 26 S. R. 39 E



26/40

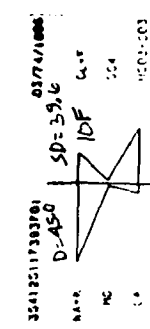
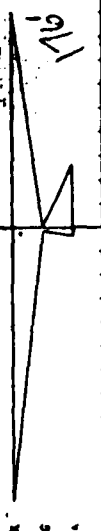


NE 1/4 T26S, R40E.
Except Section 1

NW 1/4 T26S, R40E, Volume II

06/72/1814

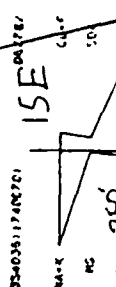
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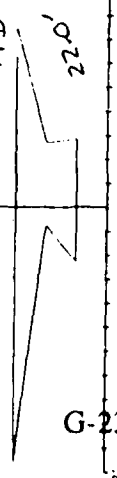
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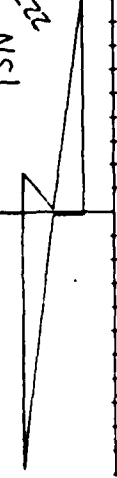
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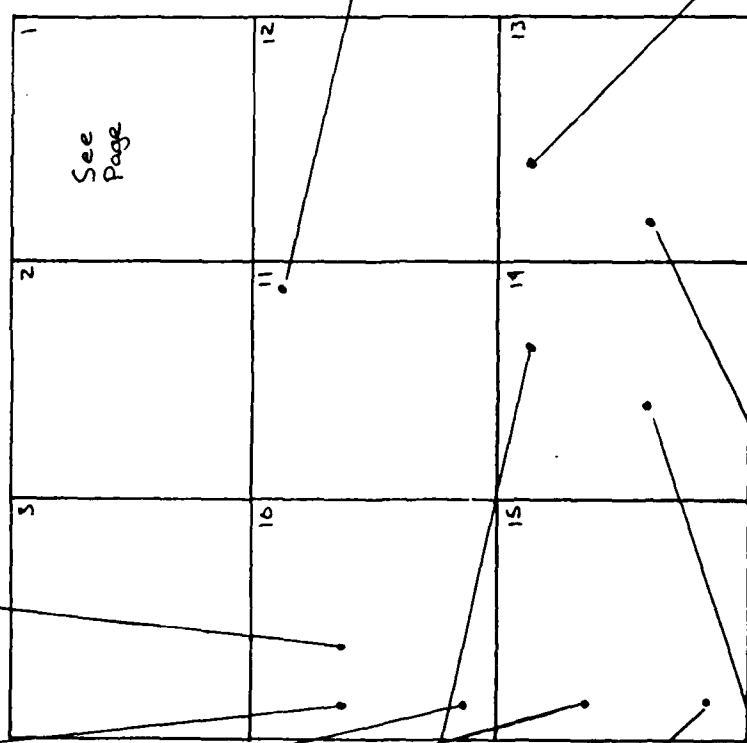
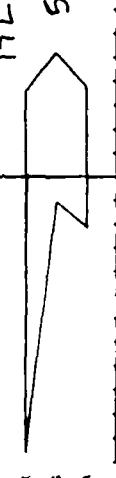
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15N

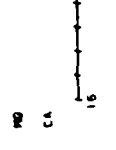


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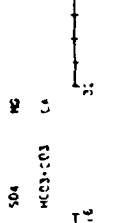
06/72/1814

13M



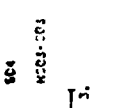
06/72/1814

13C



06/72/1814

13C



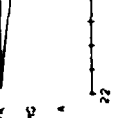
07/23/1900

11A



06/72/1814

13C



14L



15N



14B



10N



06/72/1814

10F



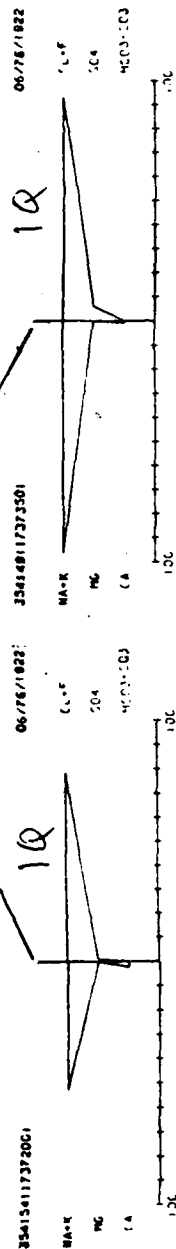
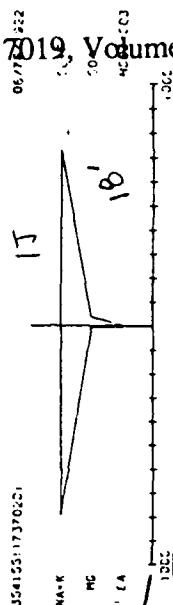
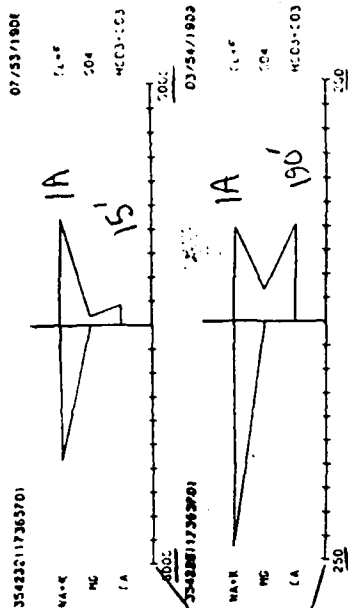
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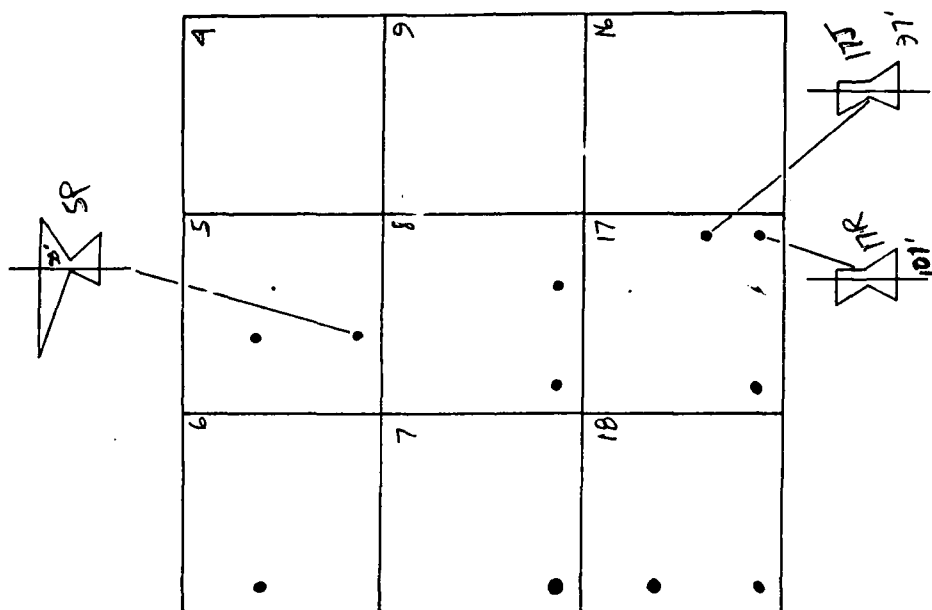
Section 1, T.26S, R.40E.

NWC TP 2019, Volume II

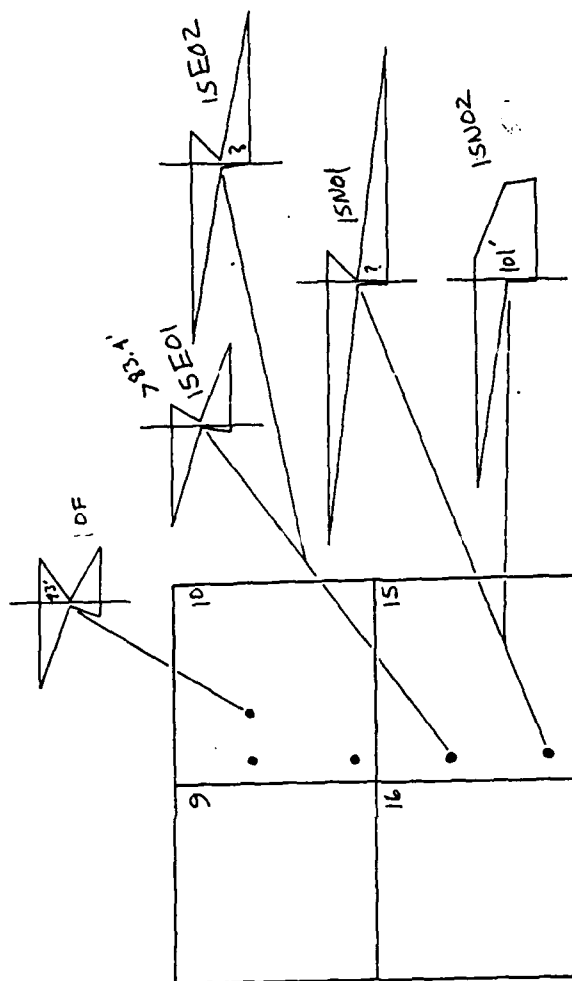




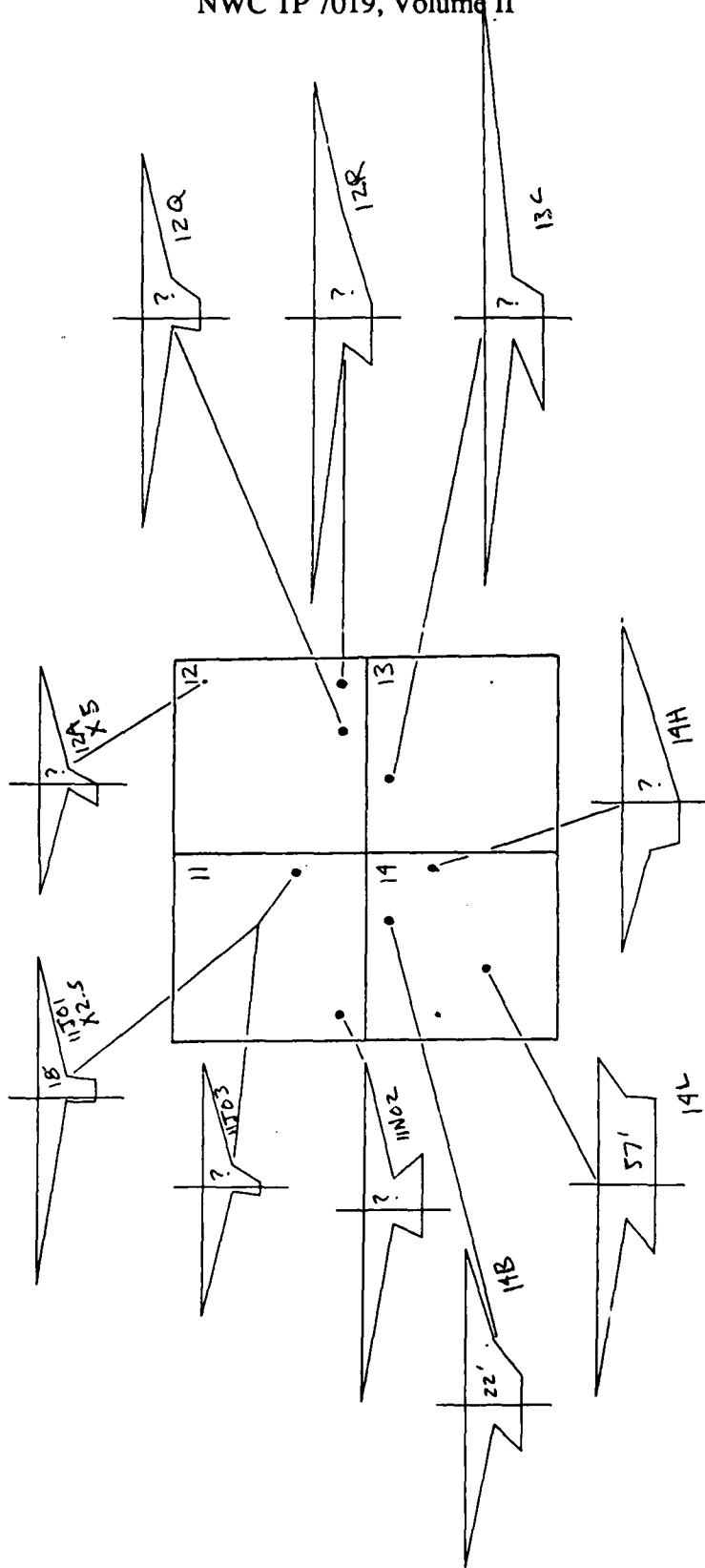
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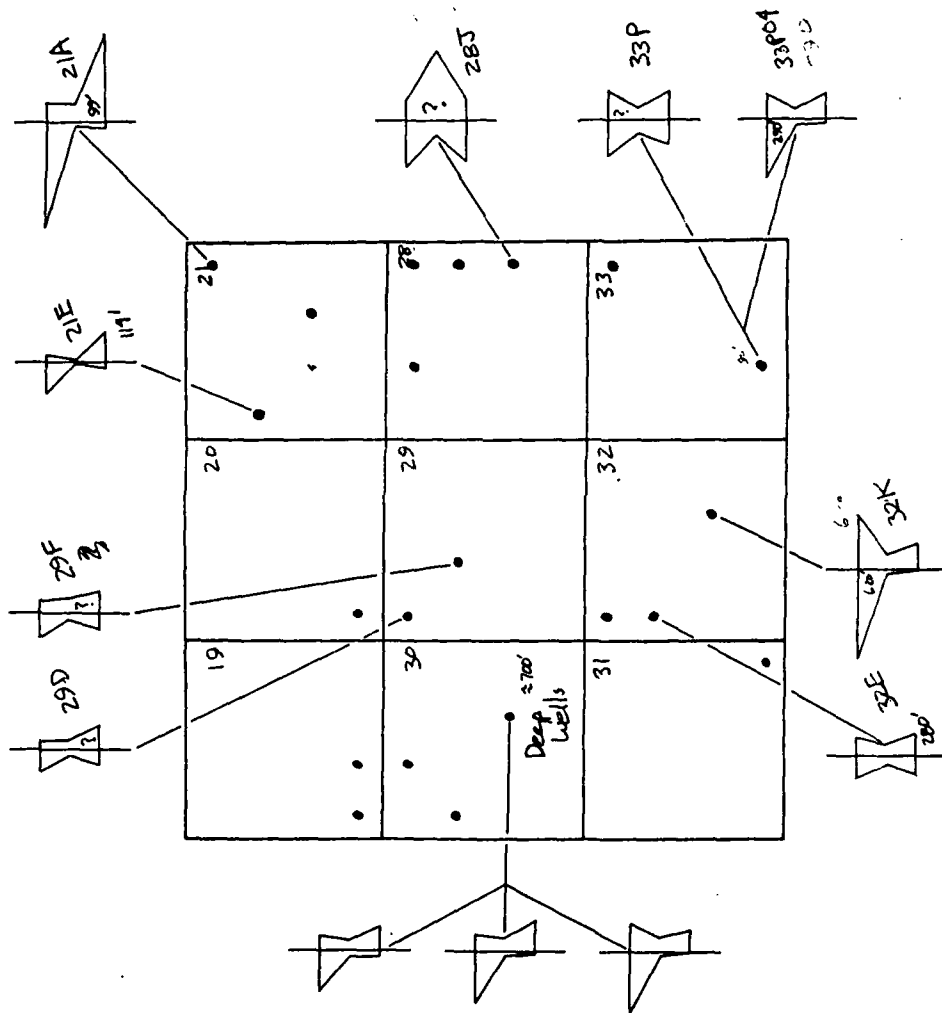


26/40

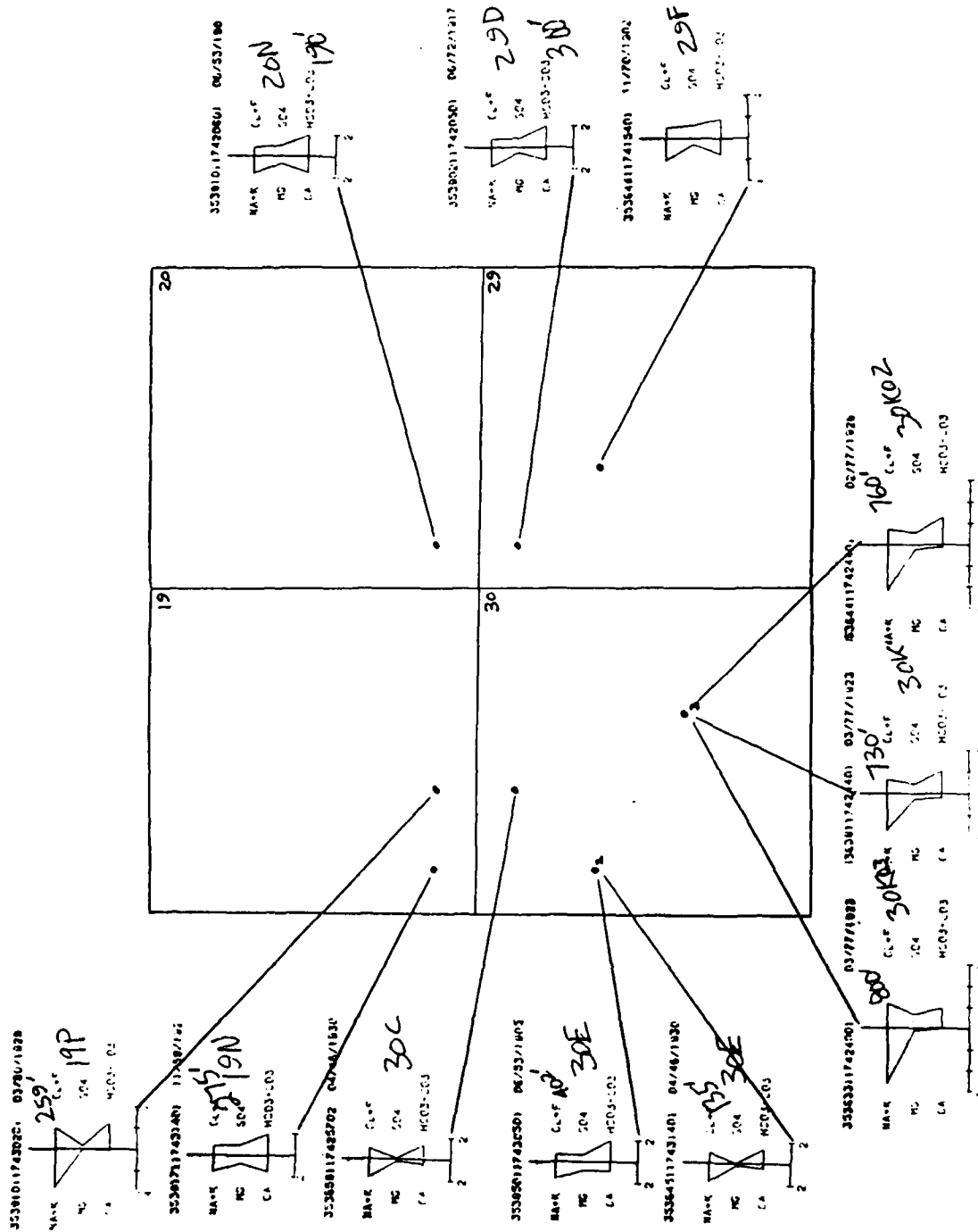


26/40



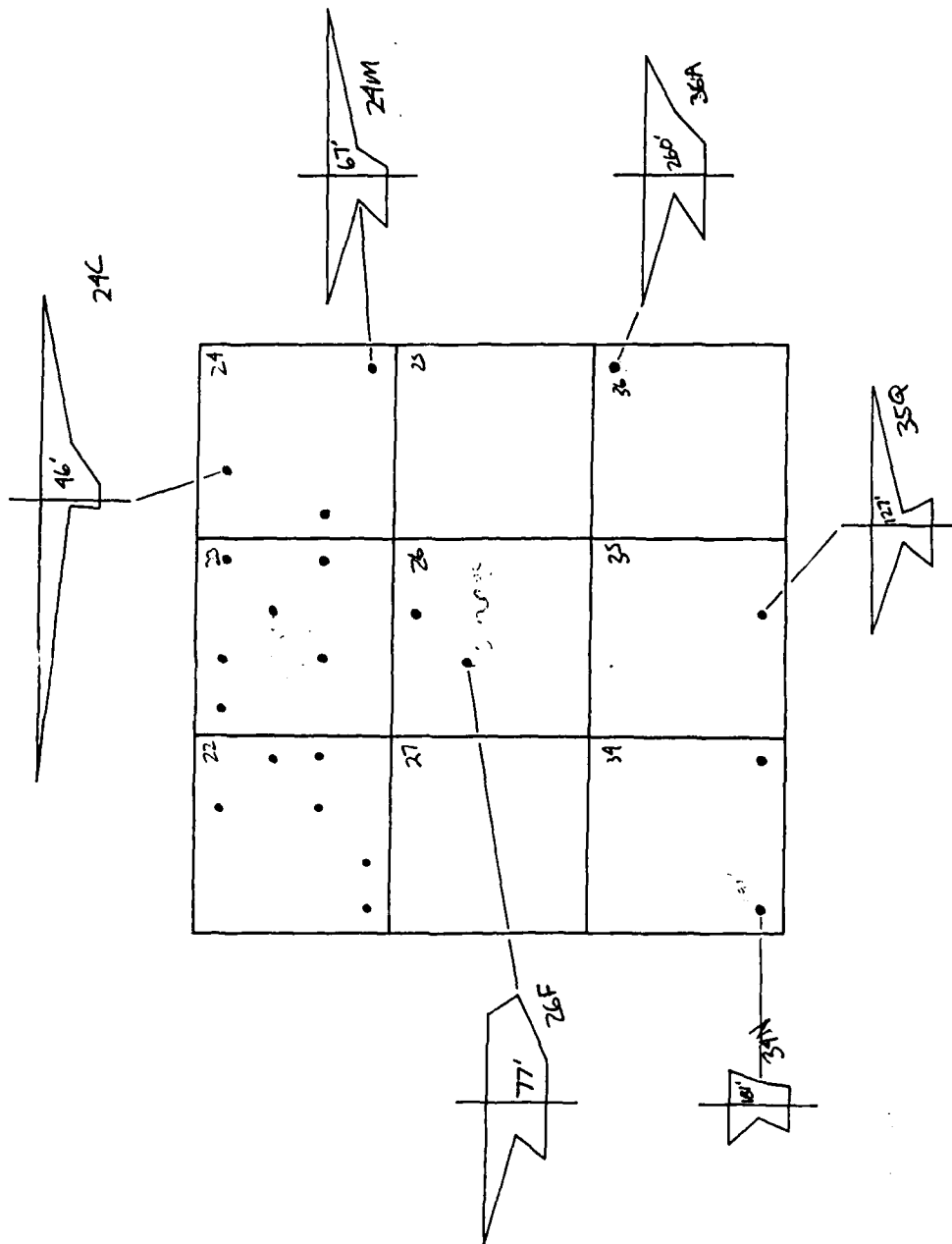


Sections 19, 20, 29, 30
T. 26 S., R. 40 E.





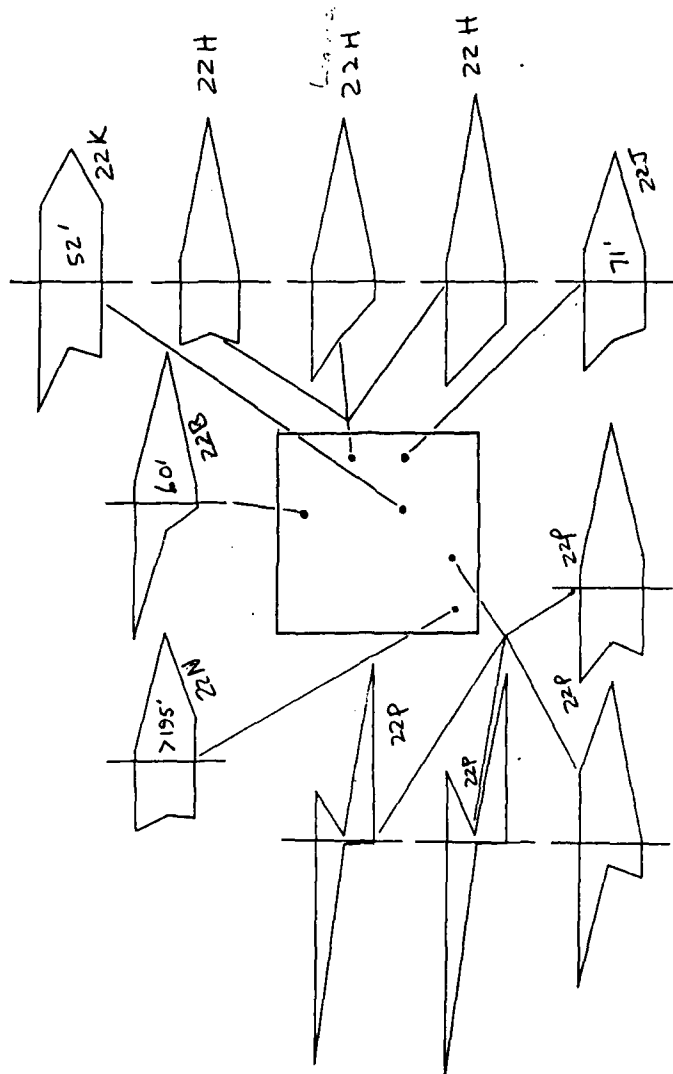
26/40



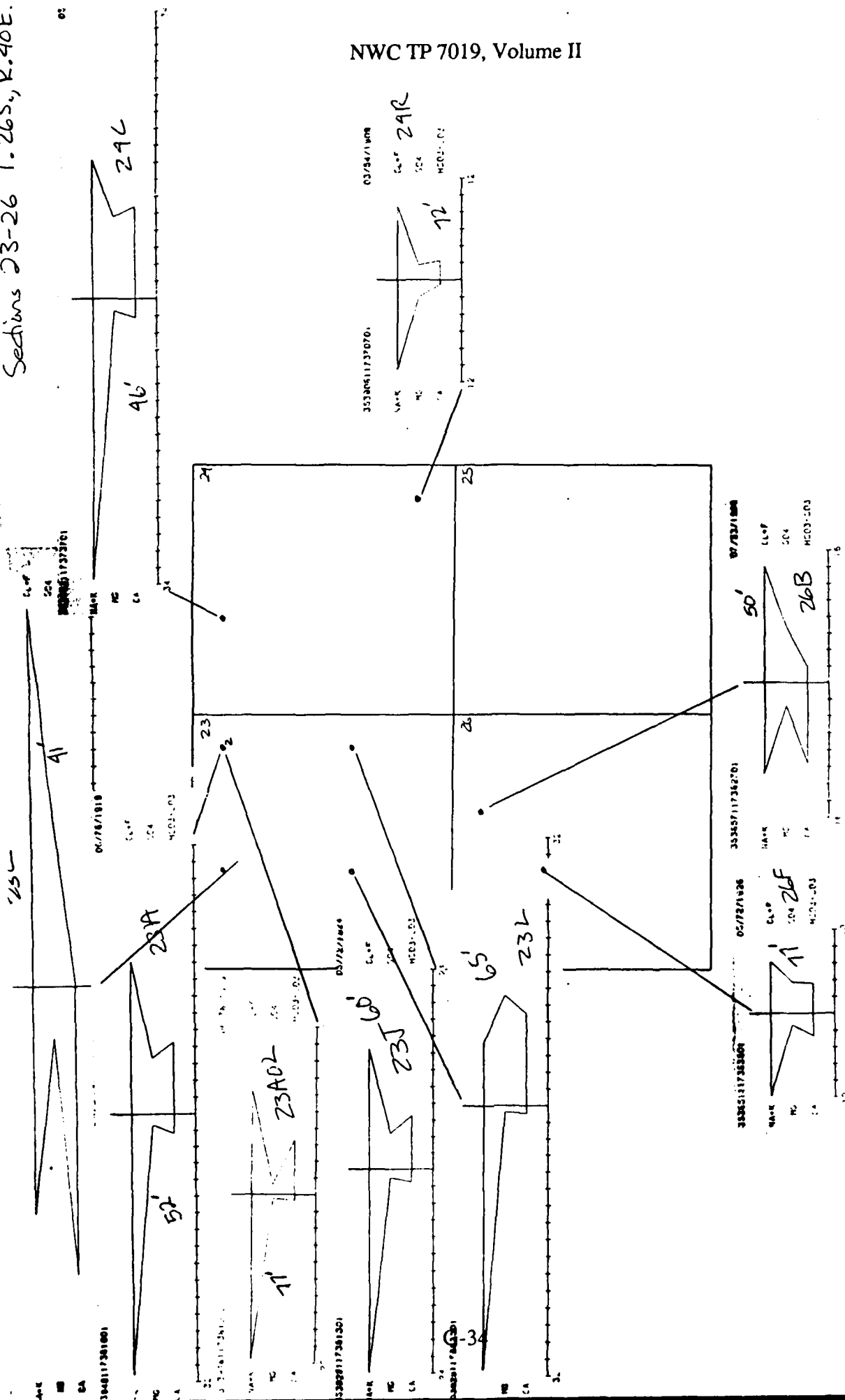
264b

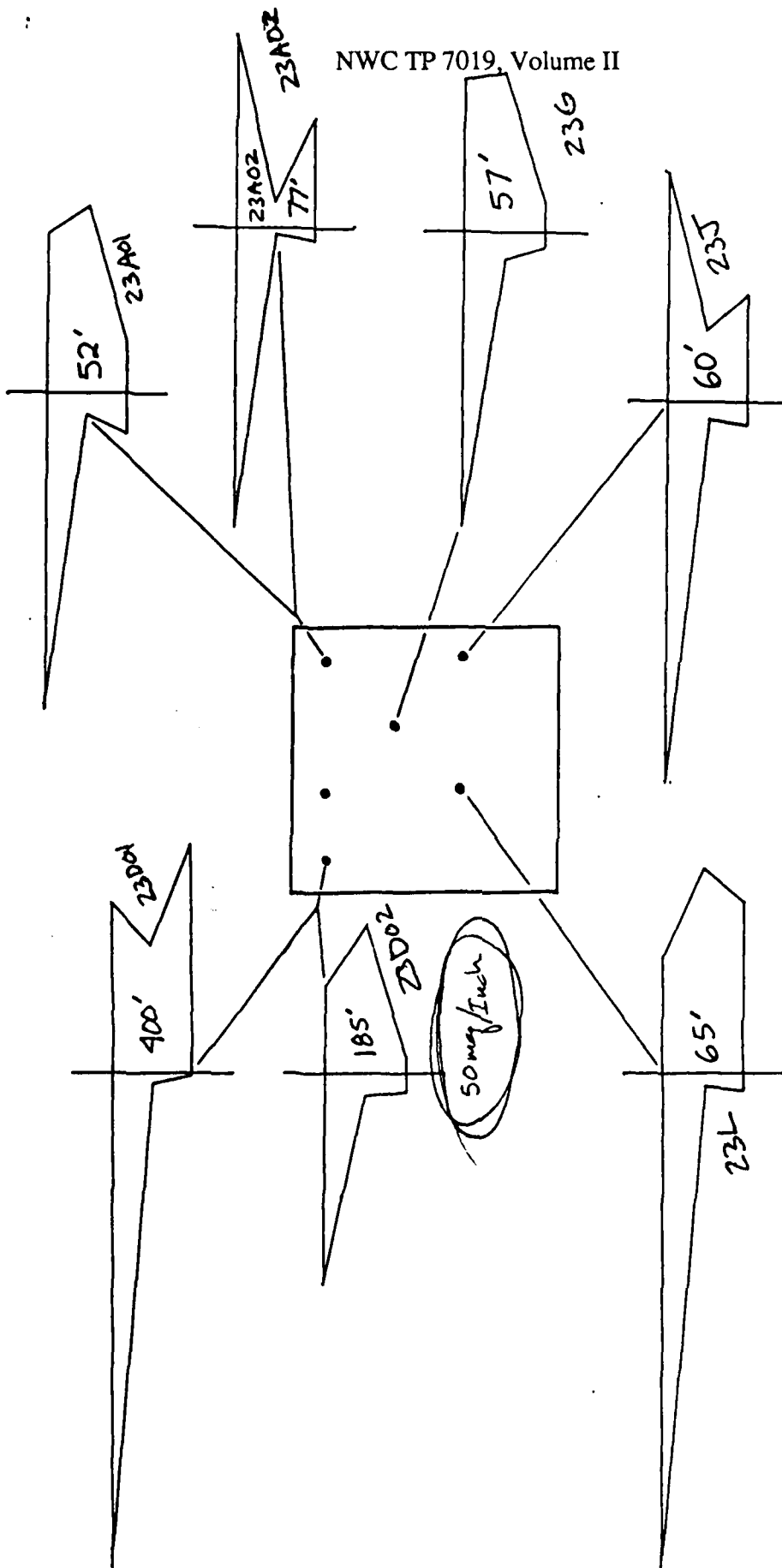
Sec. 22

NWC TP 7019, Volume II



Sediments 23-26 T. 26S., R. 40E.

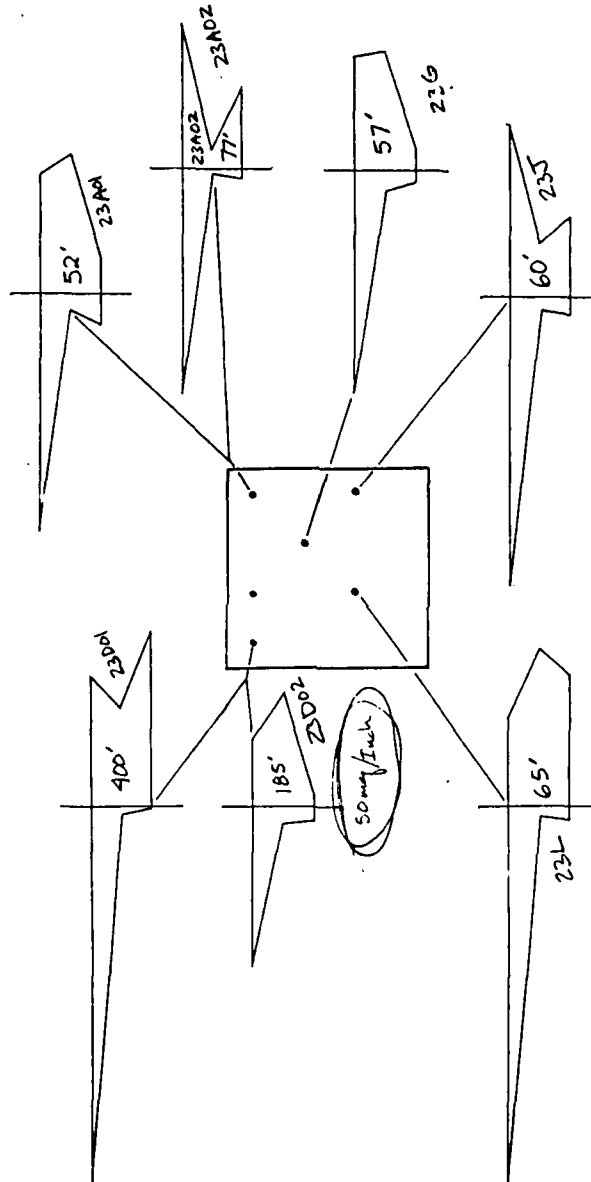




26/40 SEE 23

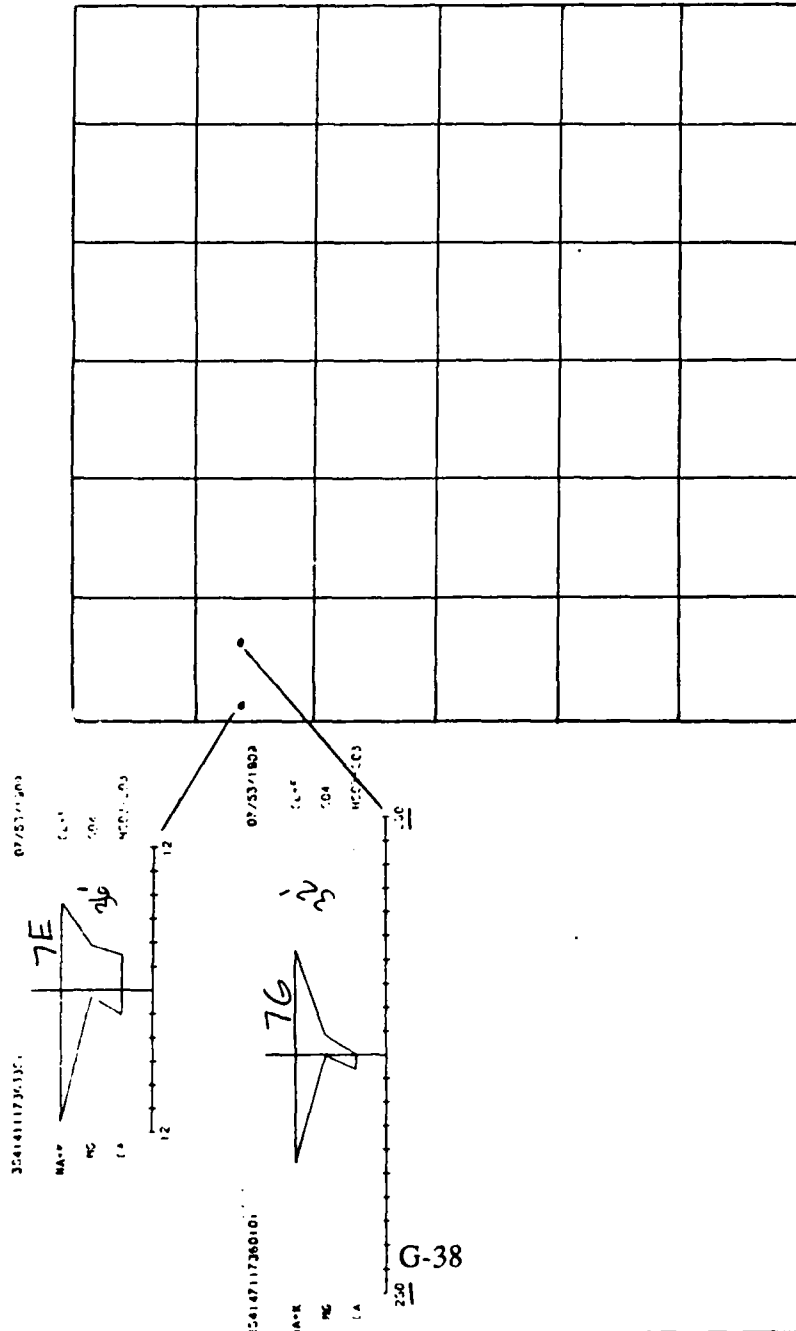
26/40

Section 23

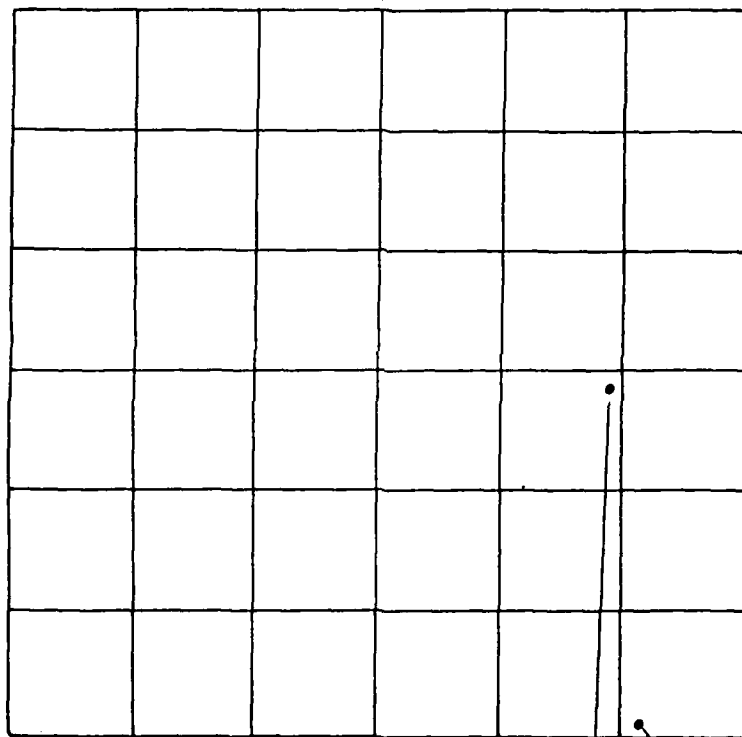




T.26S,R.41E.



T.27S., R.38E.



28R

31D

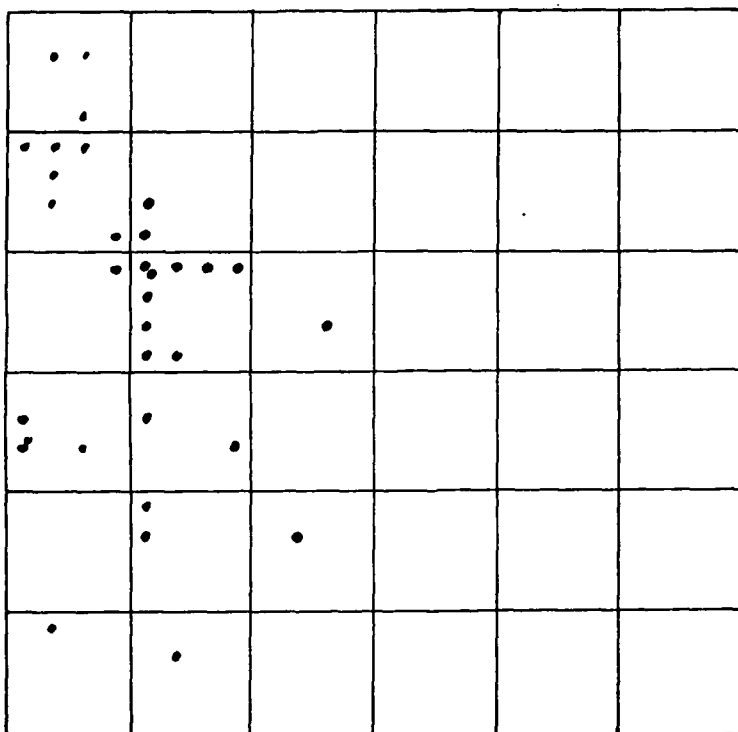
T27S, R39E.

NWC TP 7019, Volume II

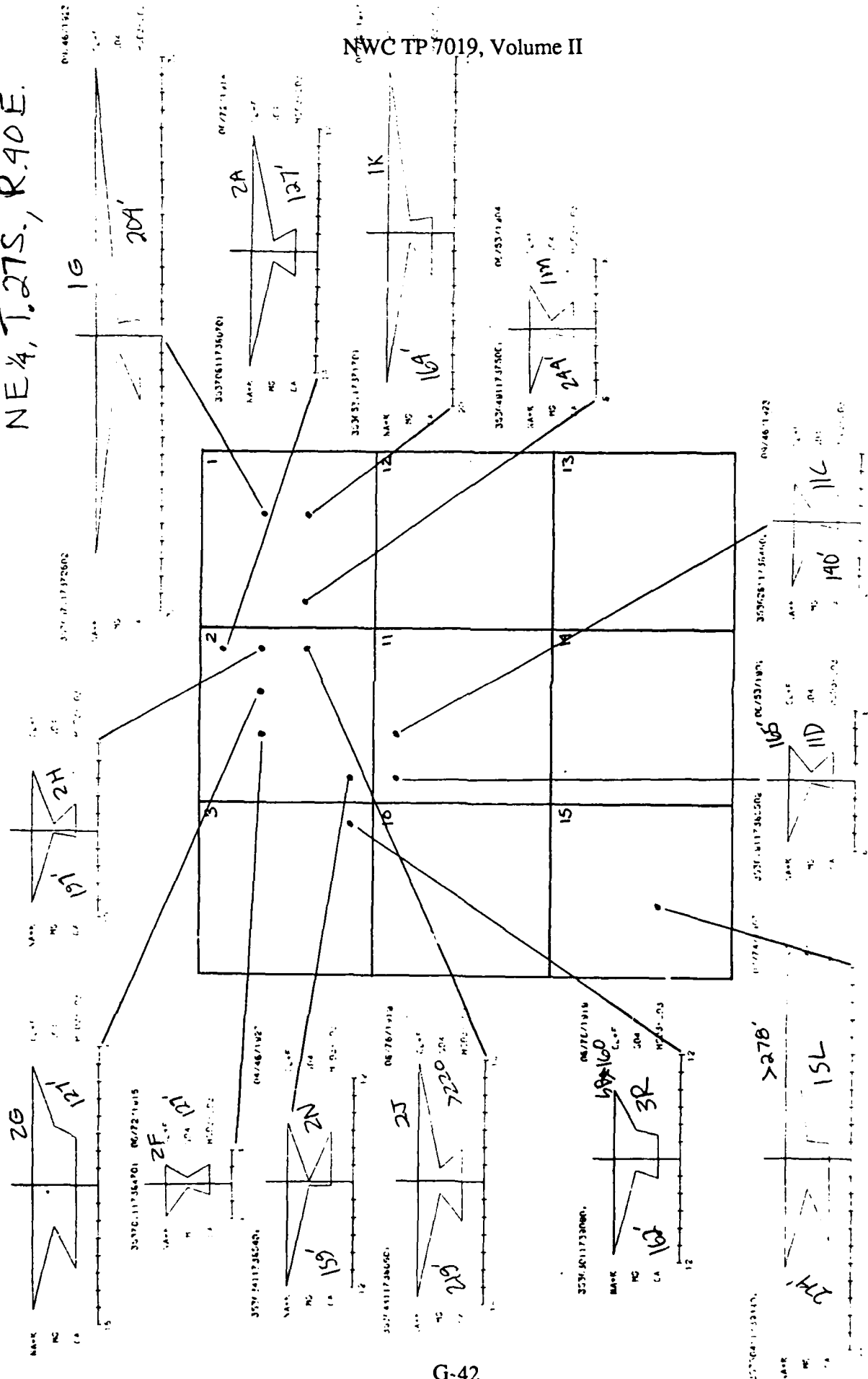
7R
31

T.27S,R.40E.

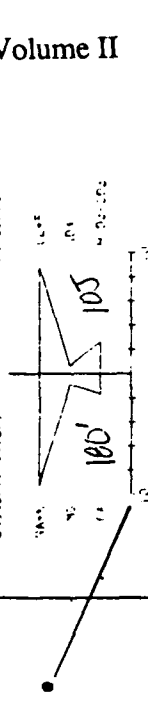
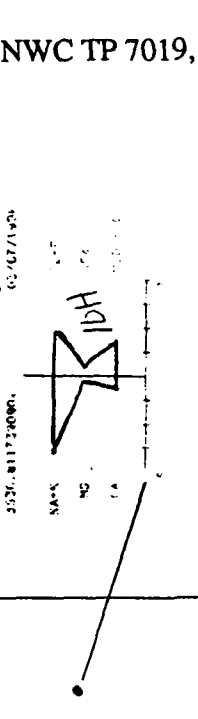
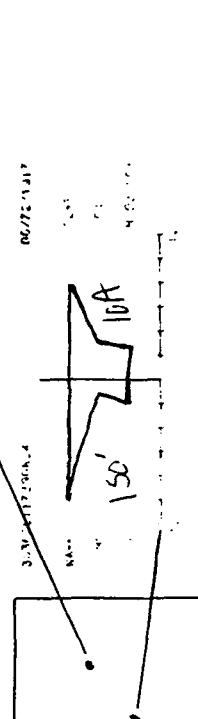
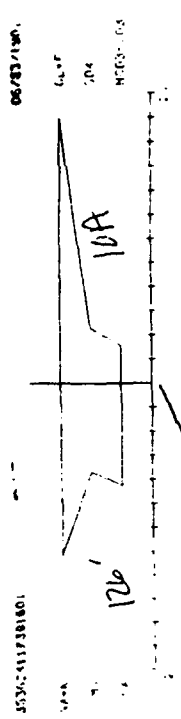
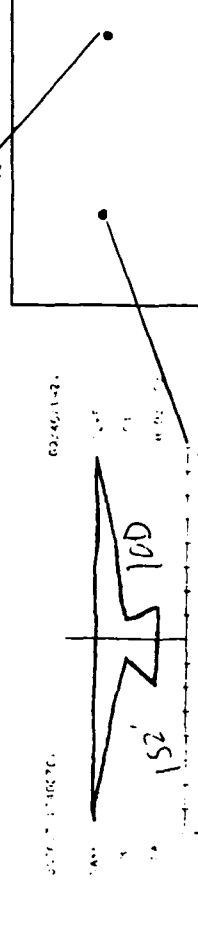
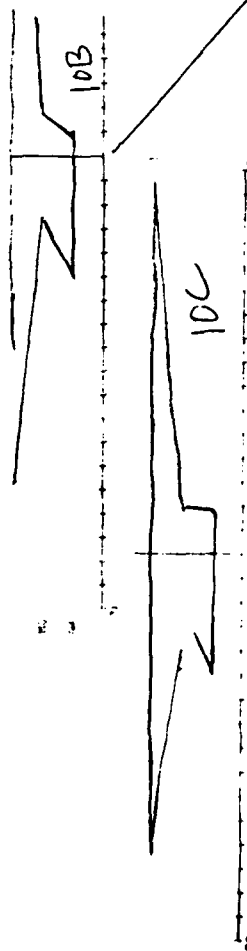
NWC TP 7019, Volume II



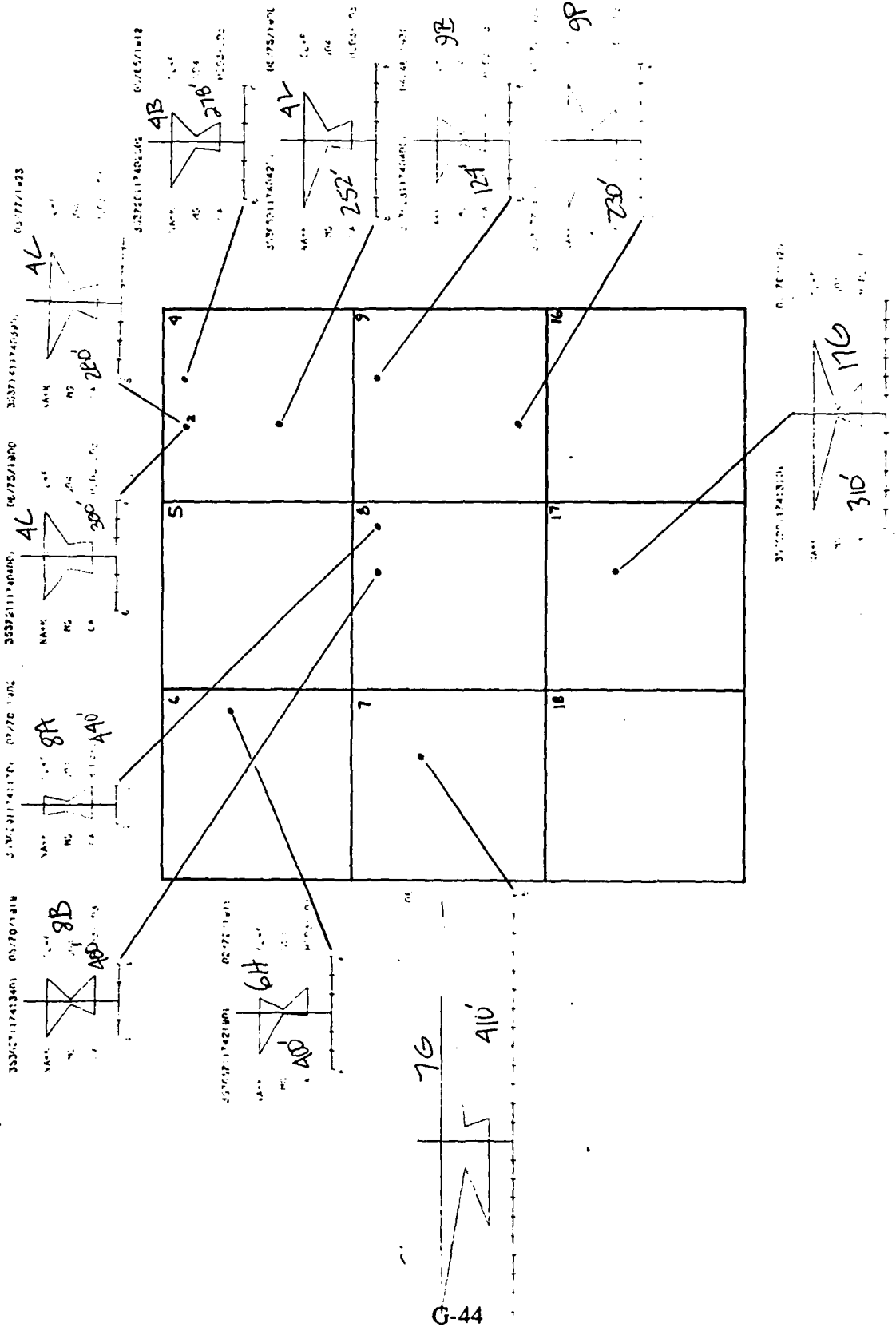
NE 1/4, T.27S., R.40E.



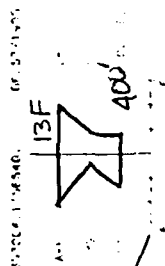
Sec. 10, T.27S., R. 40E.



NW 1/4, T.27S., R.40E.



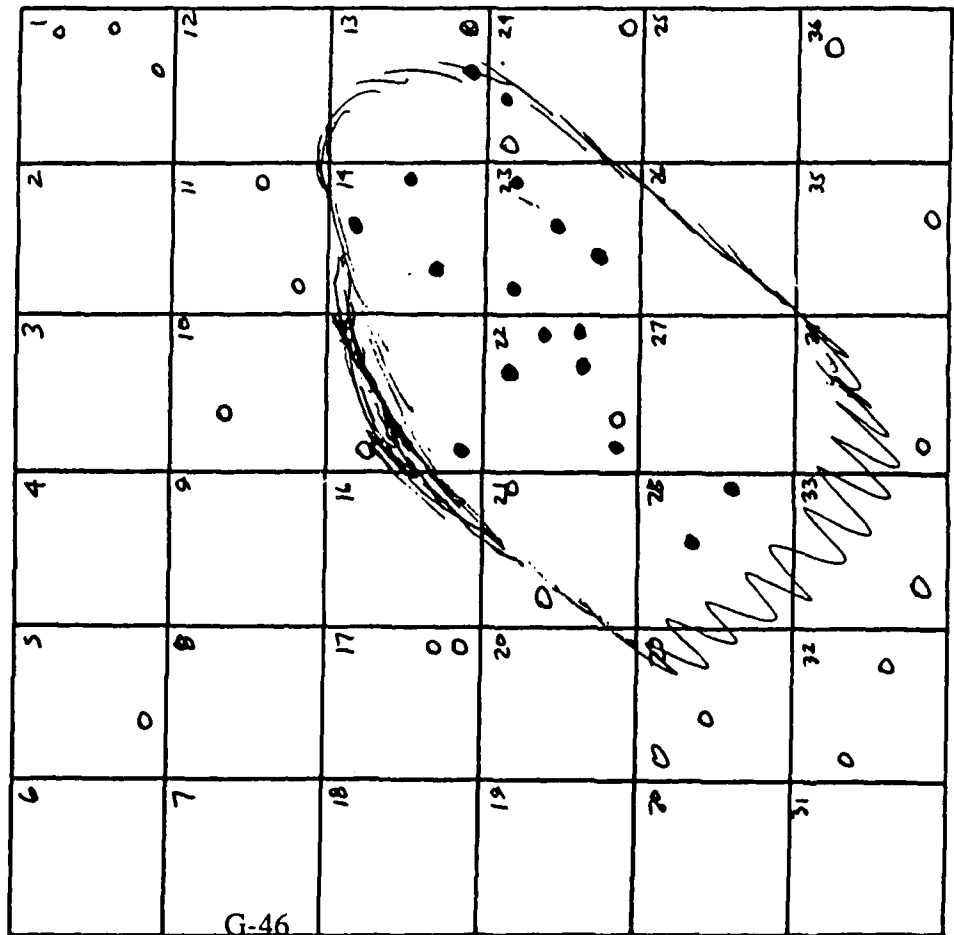
TZBS., R.37E.



1					34
2					31

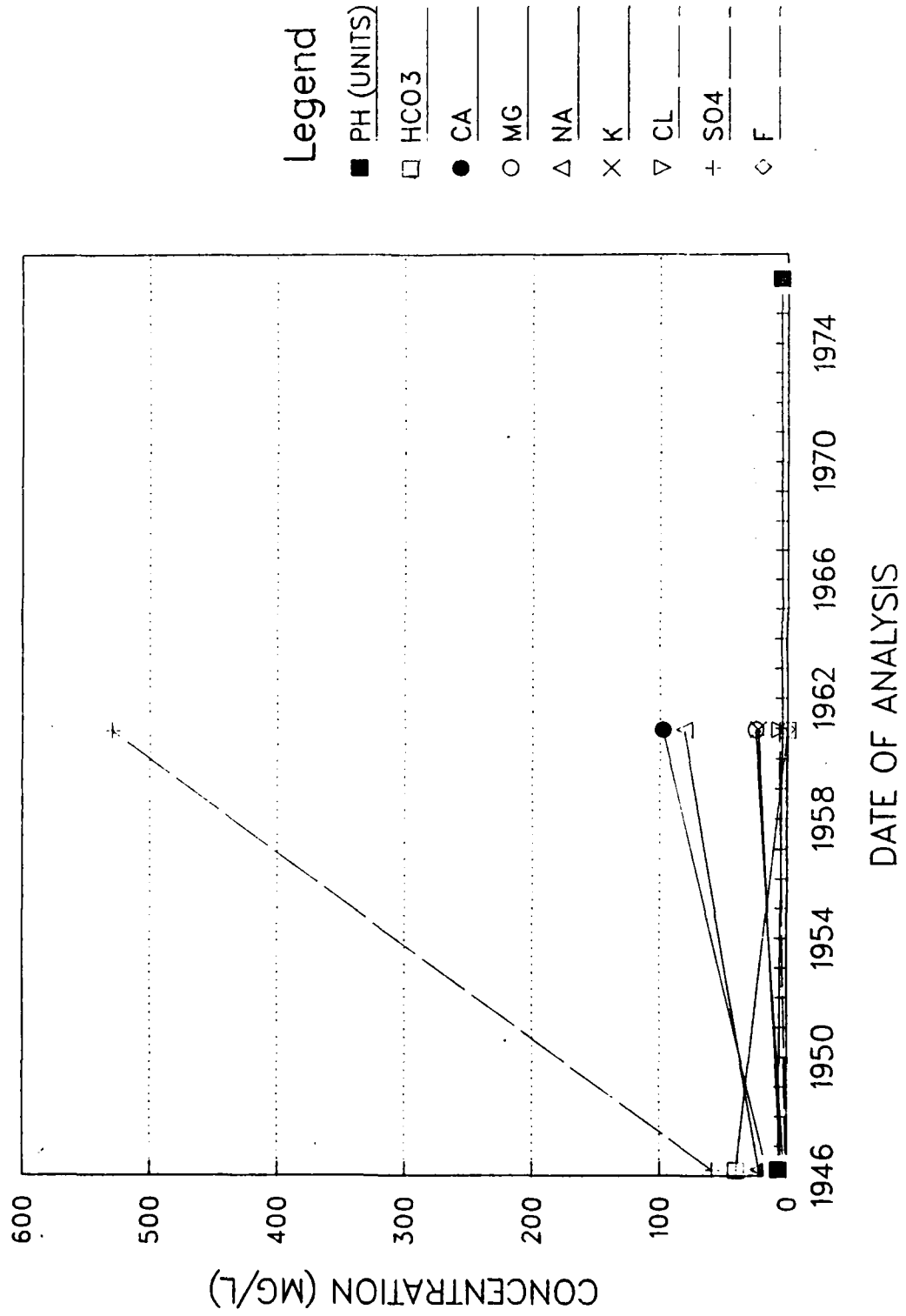
SO₄ Plume

○ = Low NaSO₄
● = NaSO₄ High

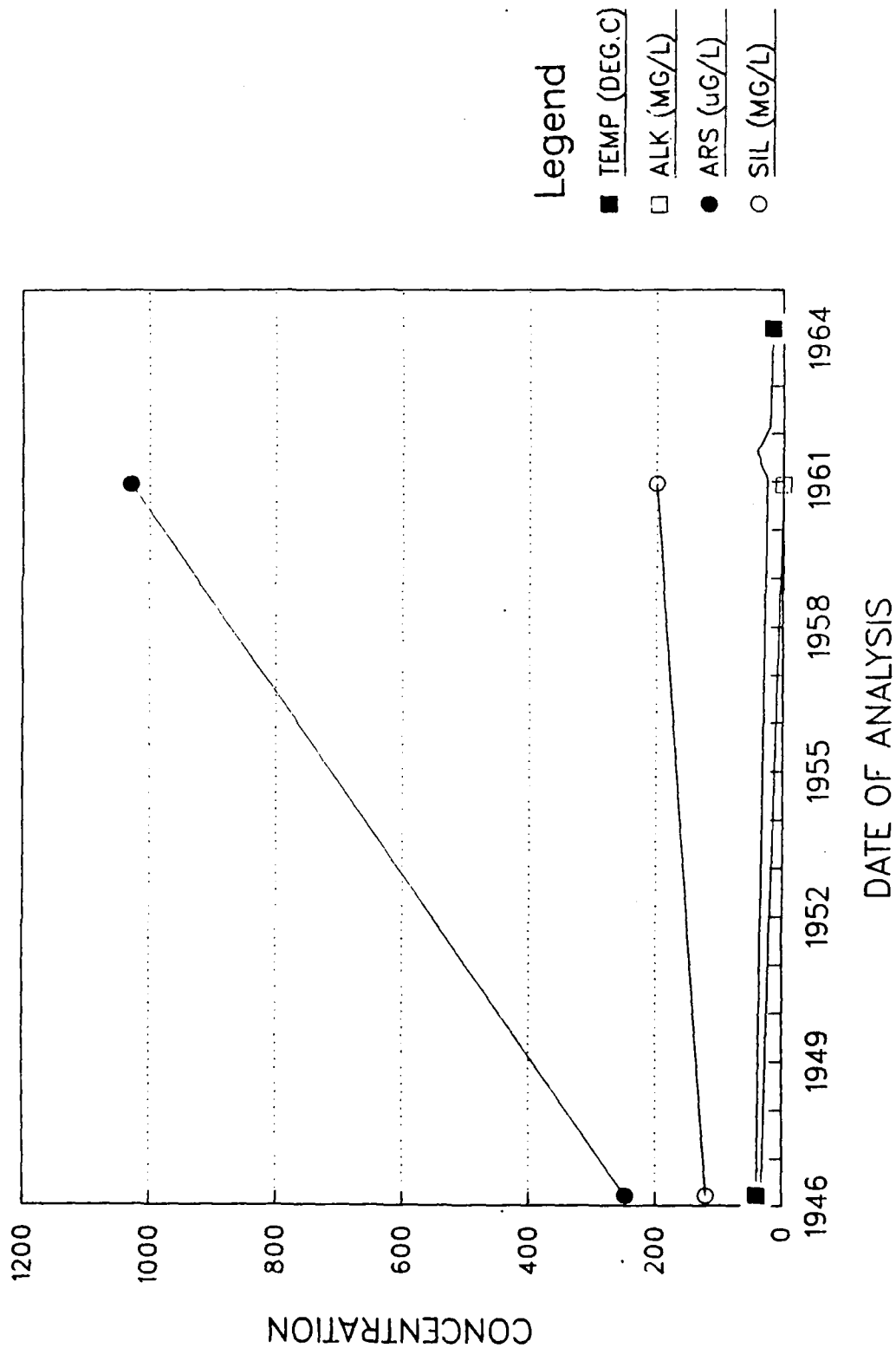


G-46

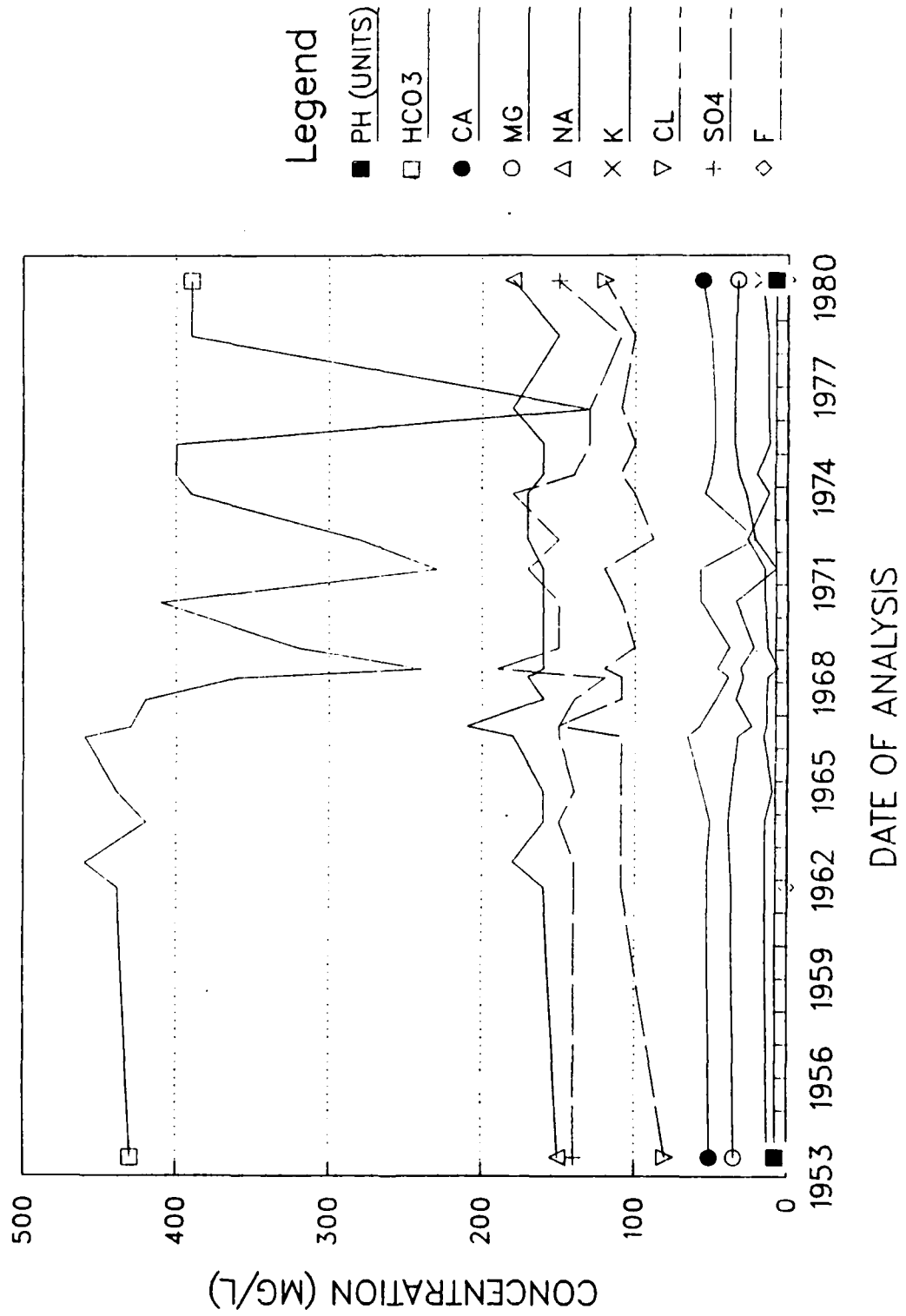
STATION NUMBER 22/39-04K02



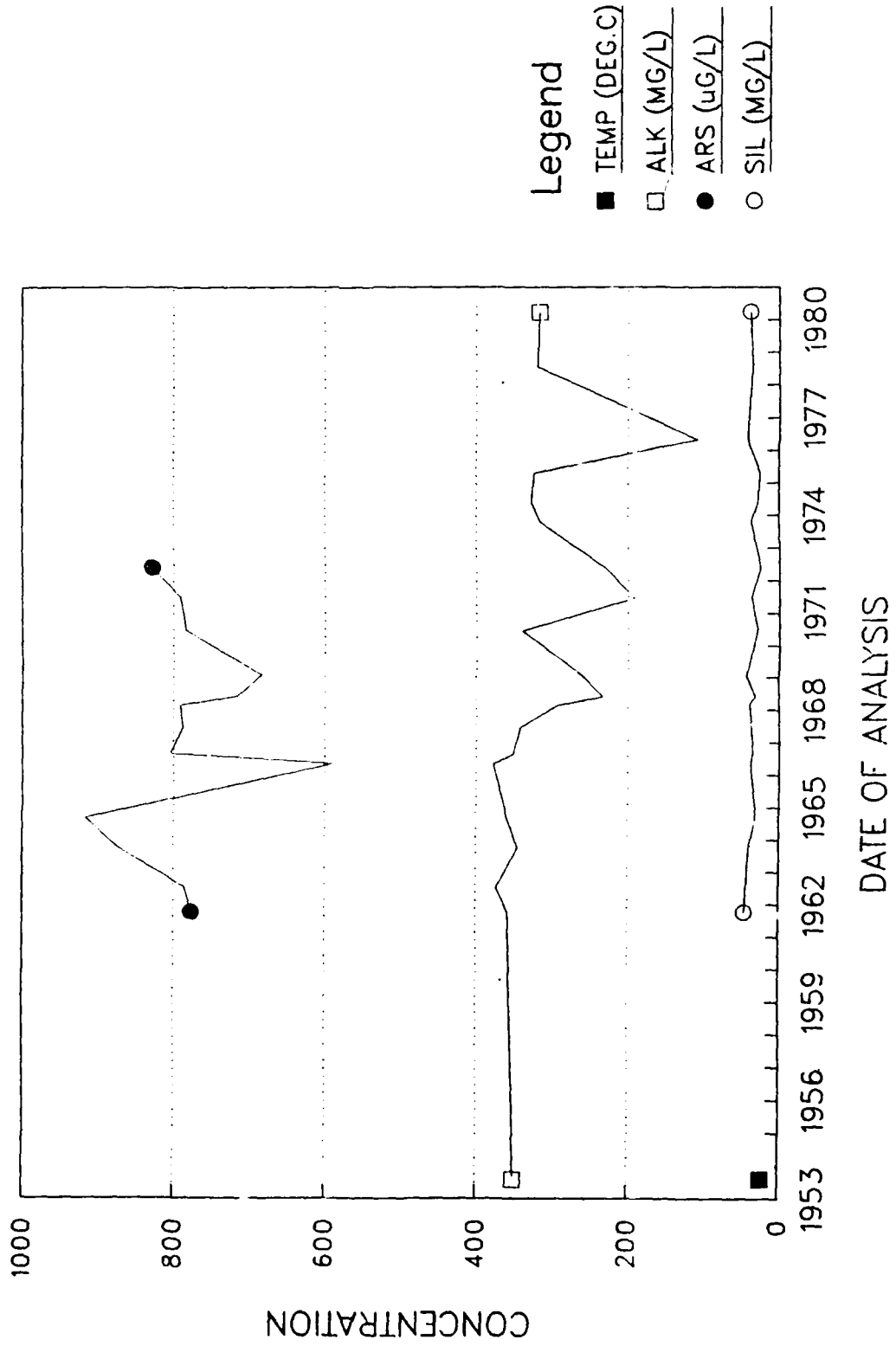
STATION NUMBER 22/39-04K02



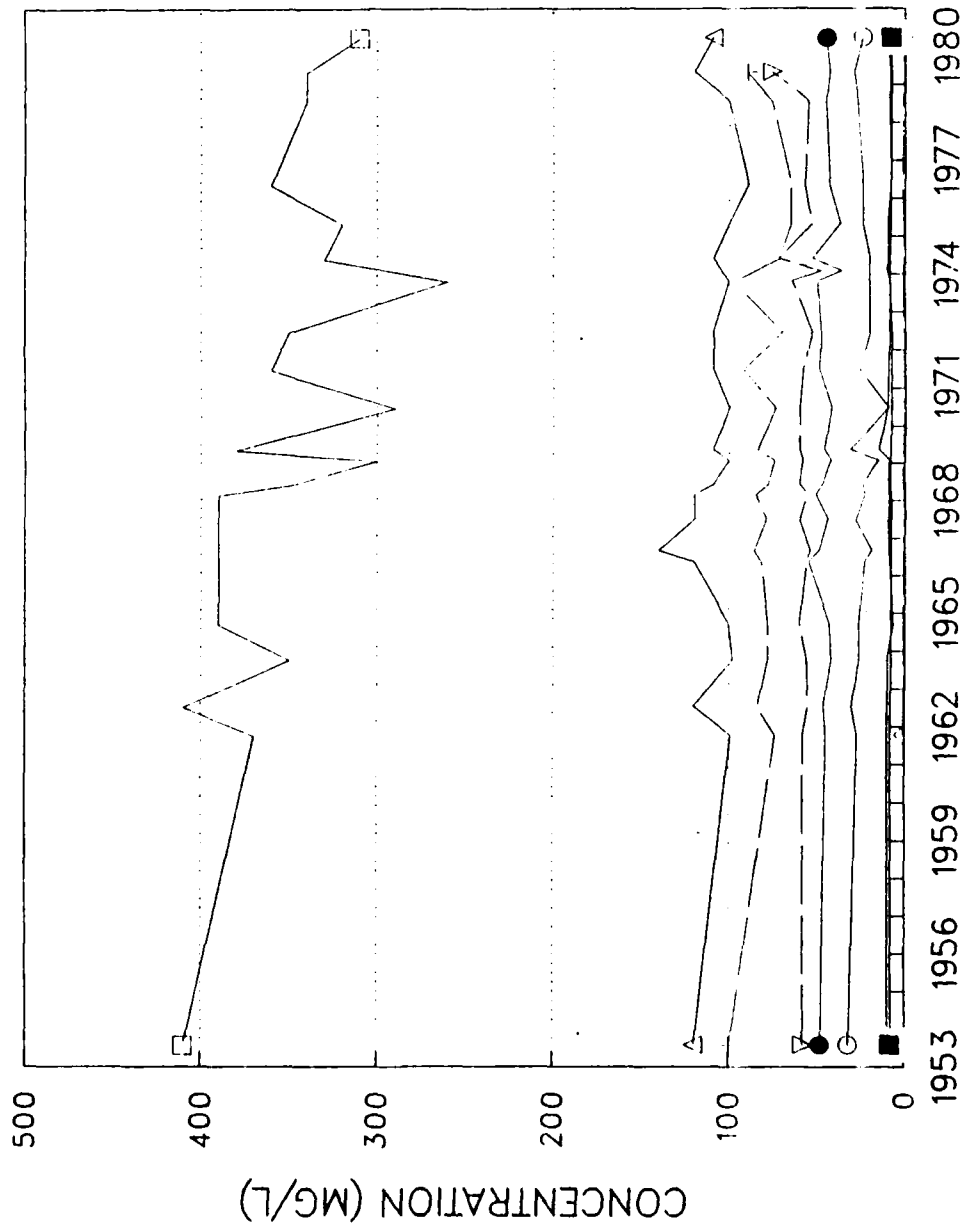
STATION NUMBER 25/39-04R01



STATION NUMBER 25/39-04R01



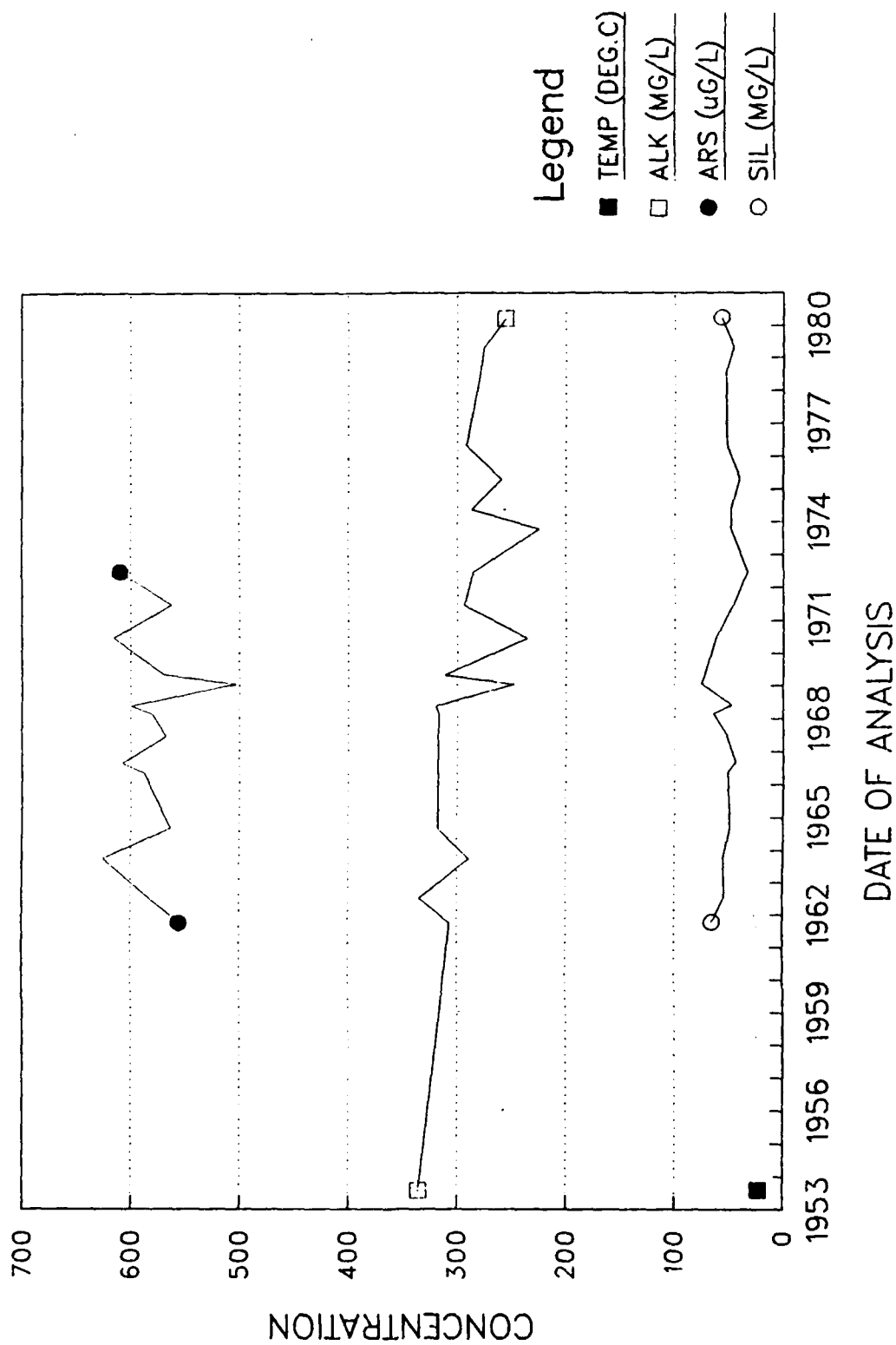
STATION NUMBER 25/39-09J01



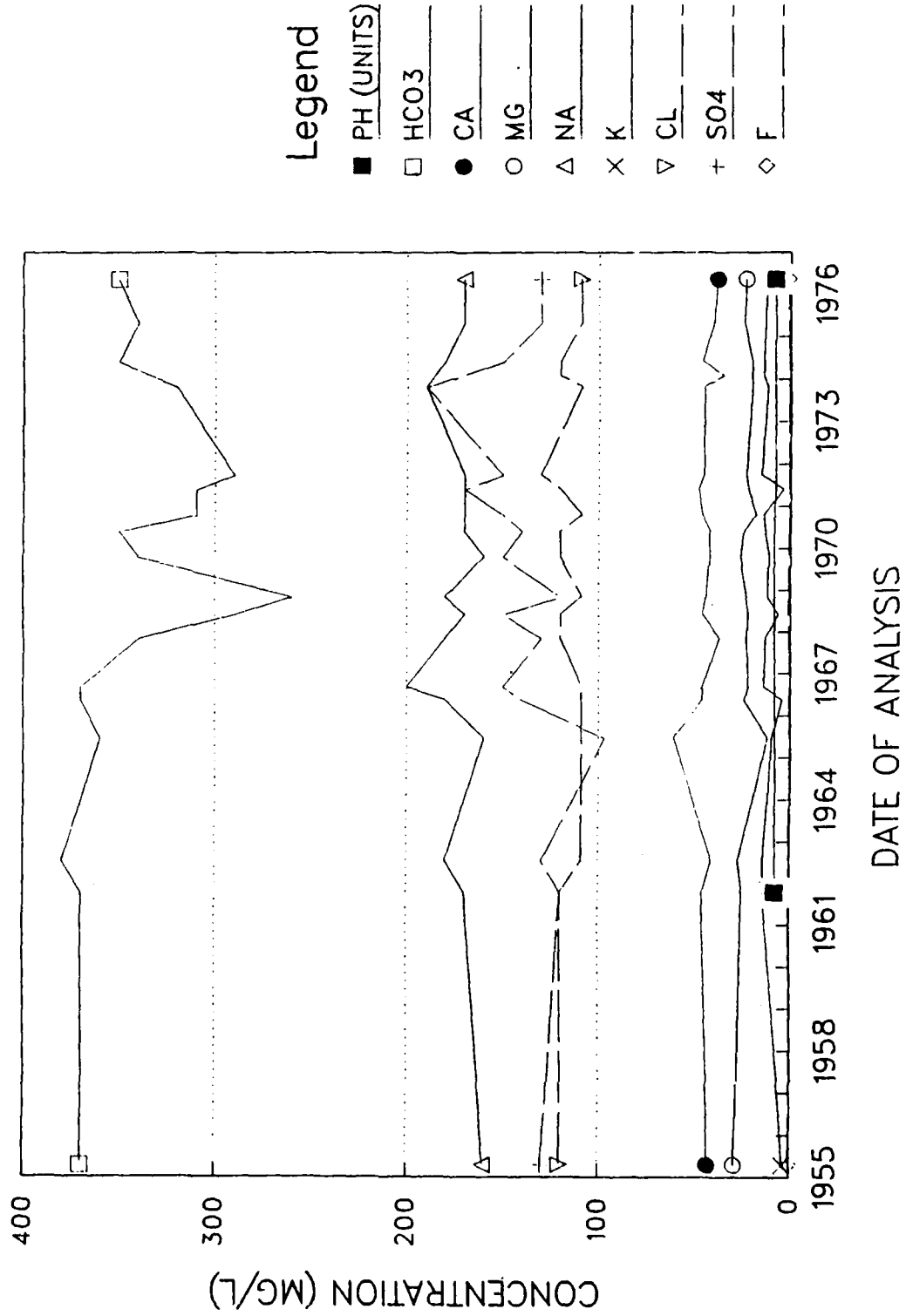
Legend

- PH (UNITS)
- HCO3
- CA
- MG
- △ NA
- × K
- ▽ CL
- + S04
- ◇ F

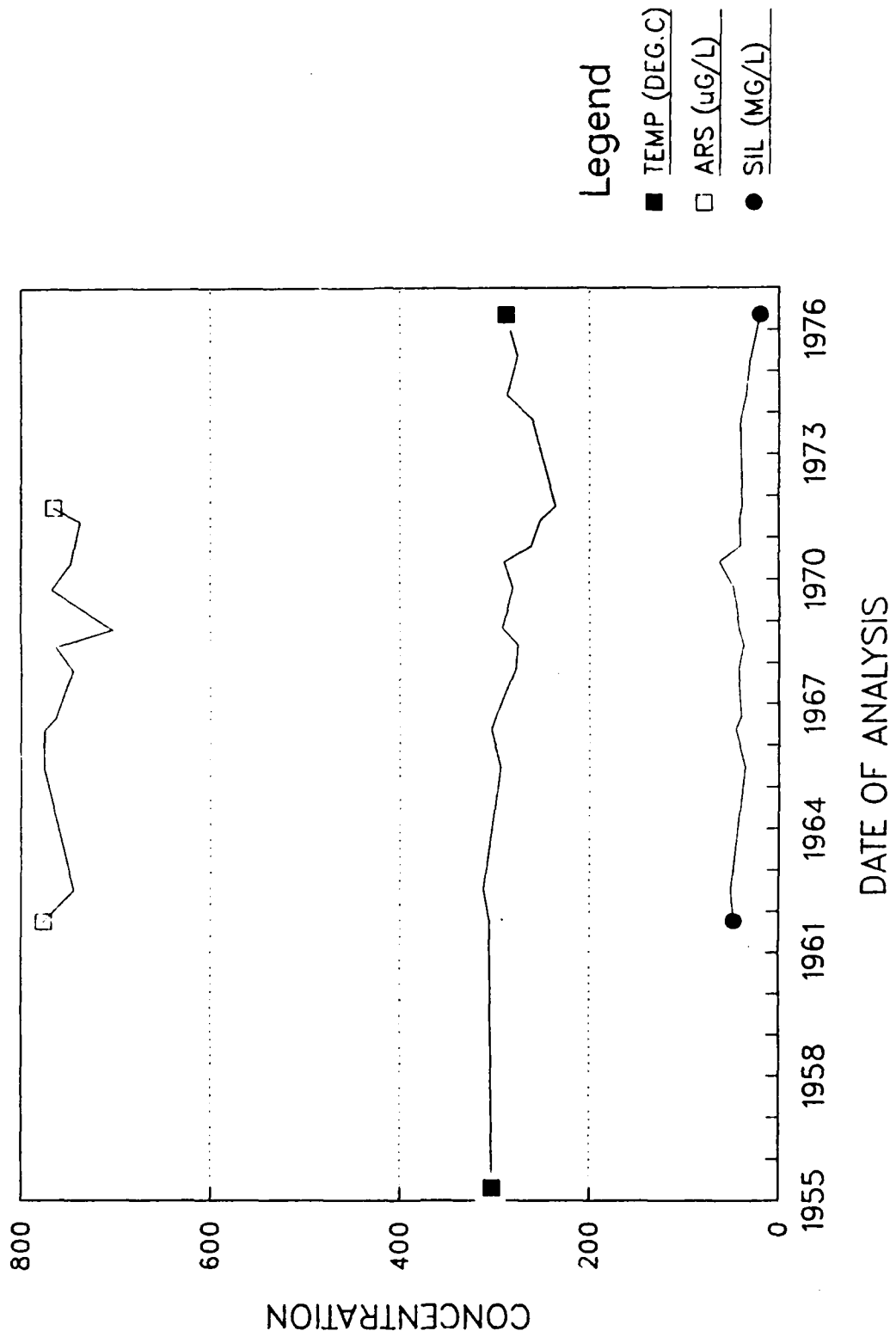
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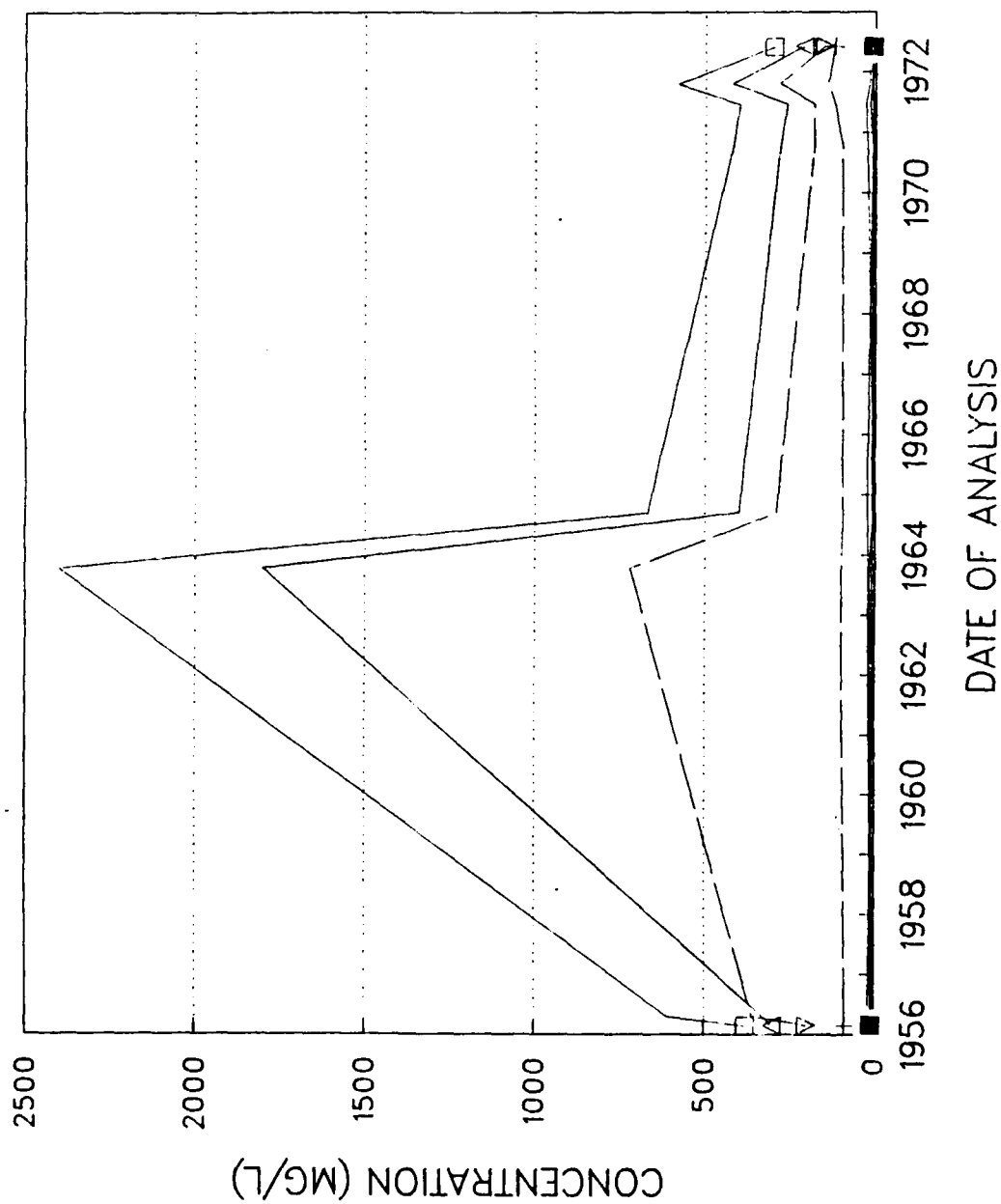
STATION NUMBER 25/39-12R02



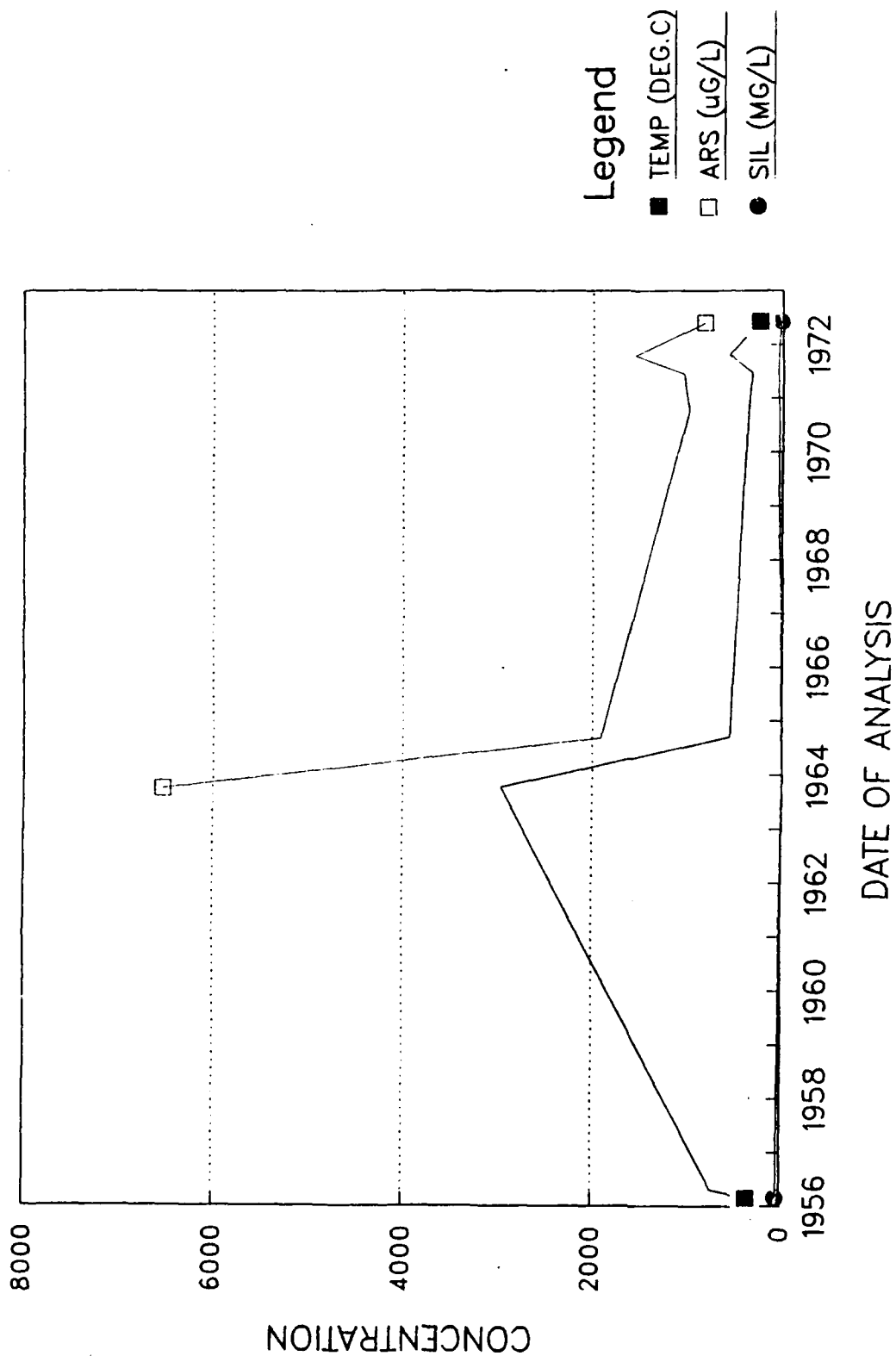
STATION NUMBER 25/39-12R02



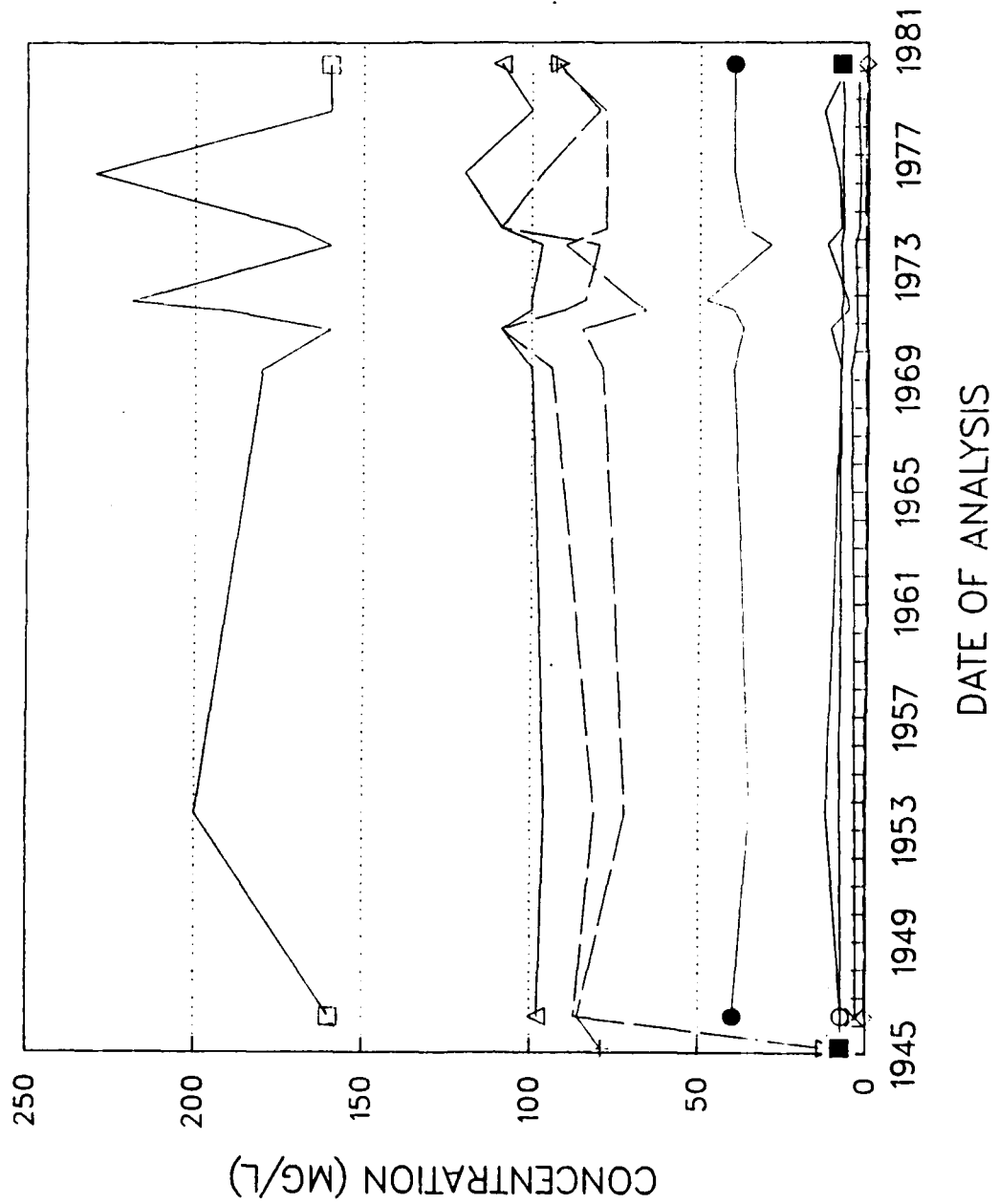
STATION NUMBER 25/39-26H01



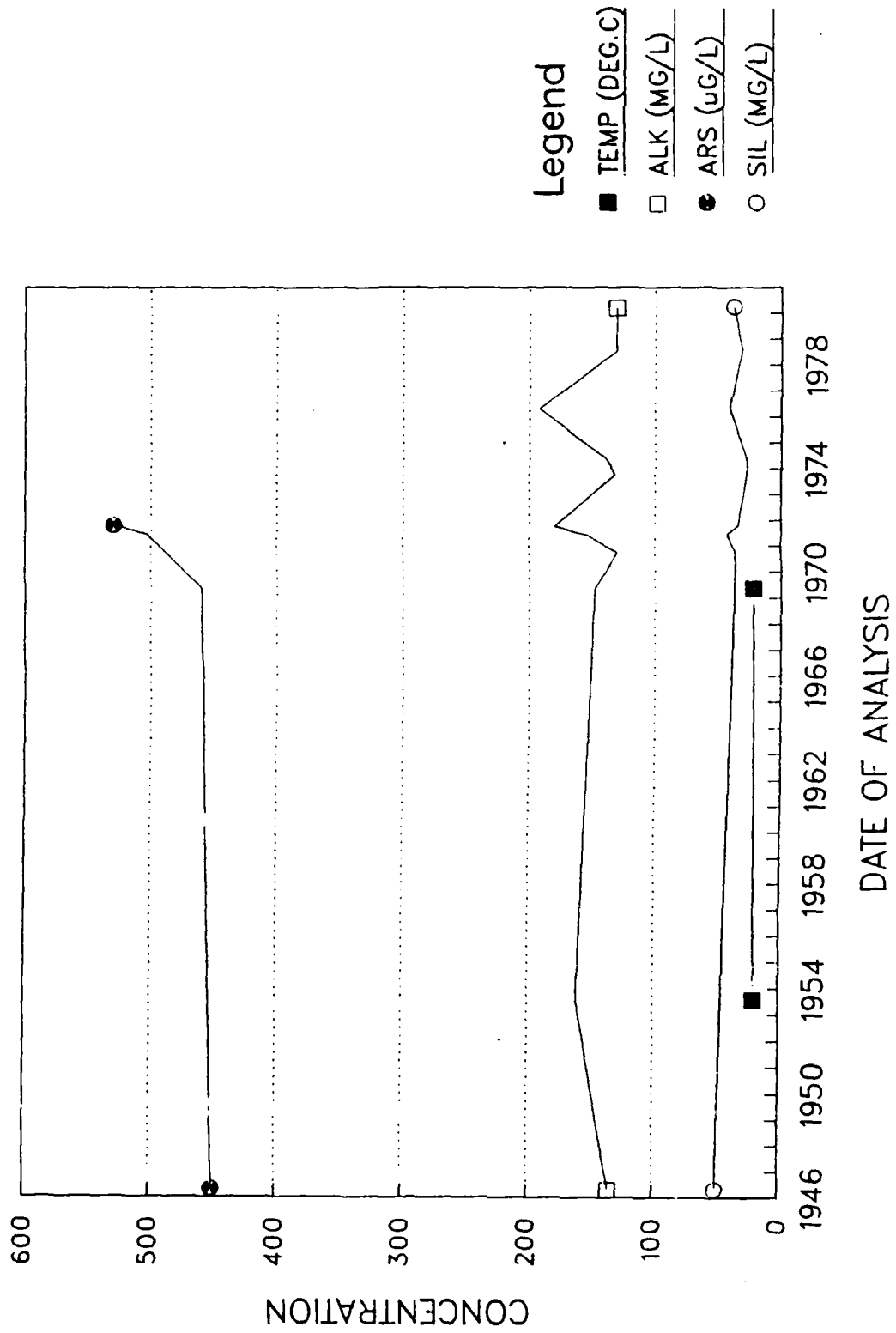
STATION NUMBER 25/39-26H01



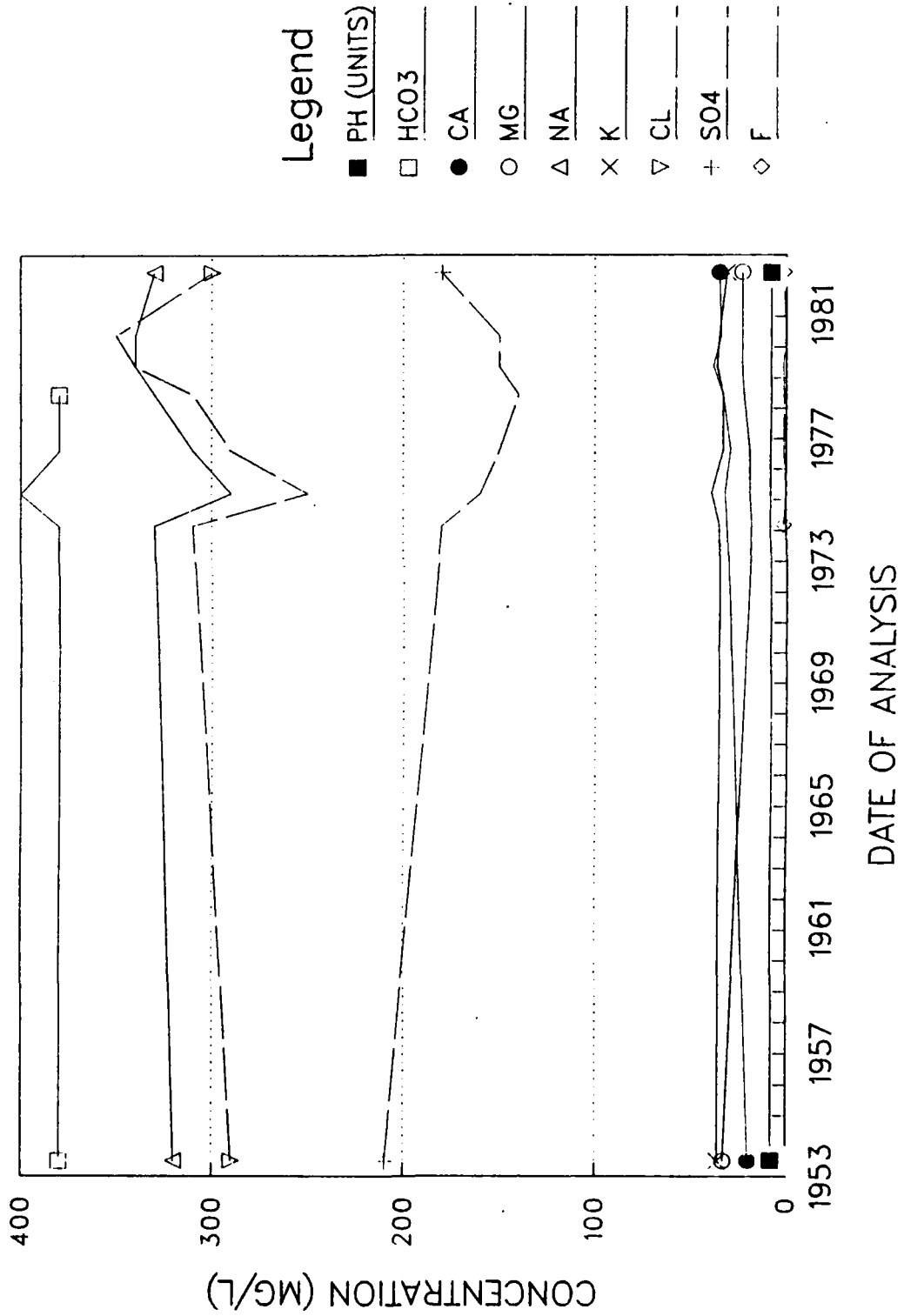
STATION NUMBER 25/39-35N01



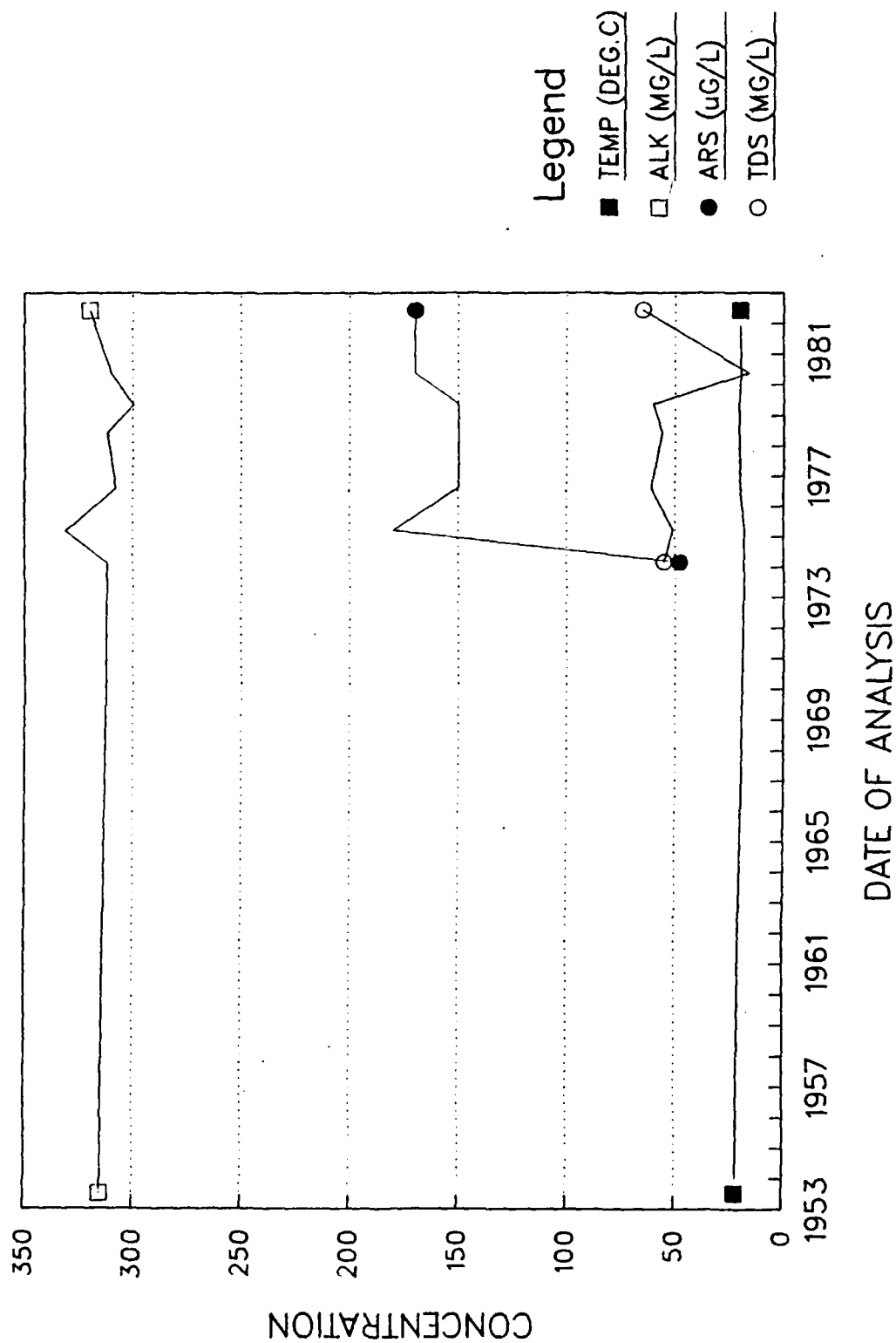
STATION NUMBER 25/39-35N01



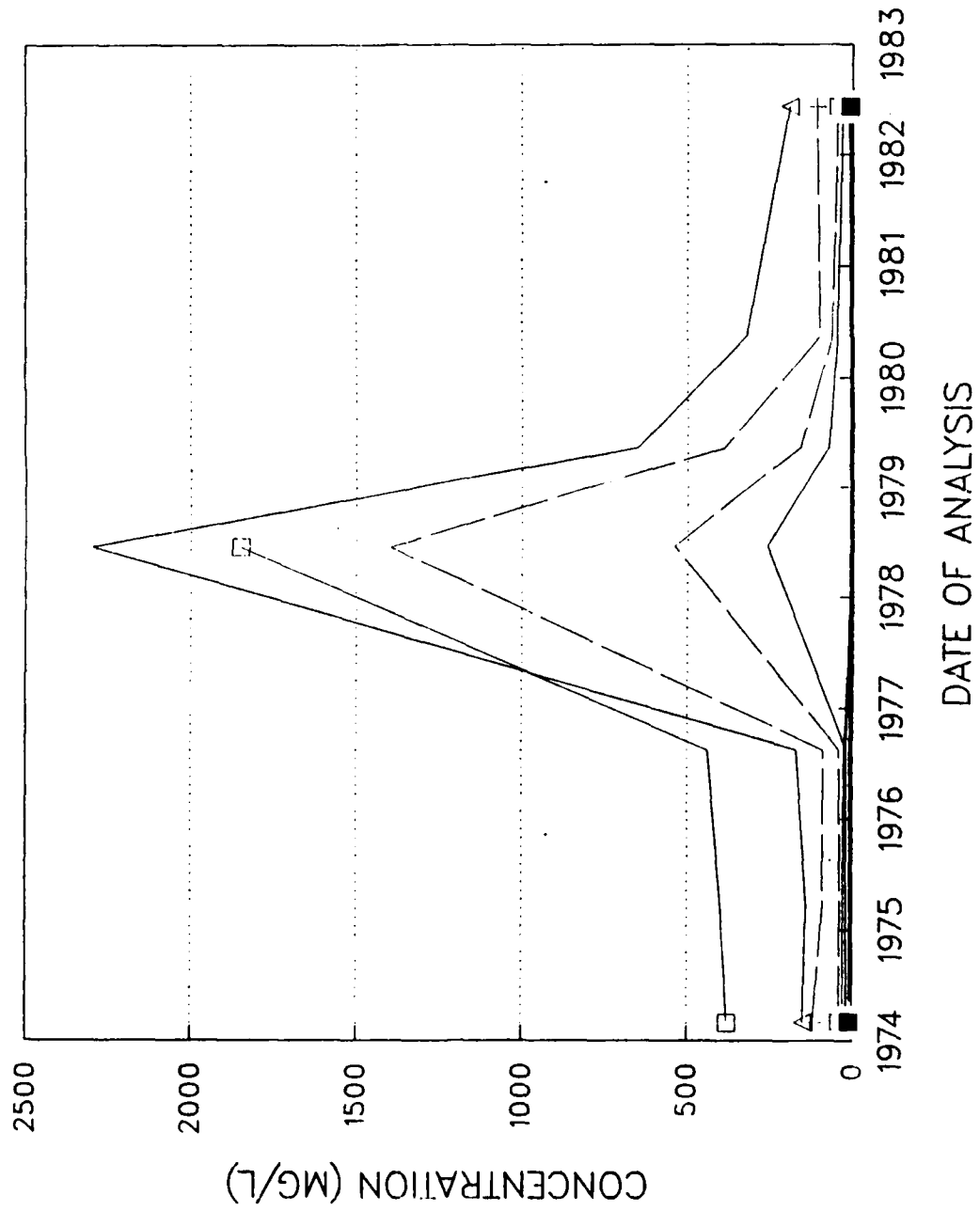
STATION NUMBER 25/40-08A01



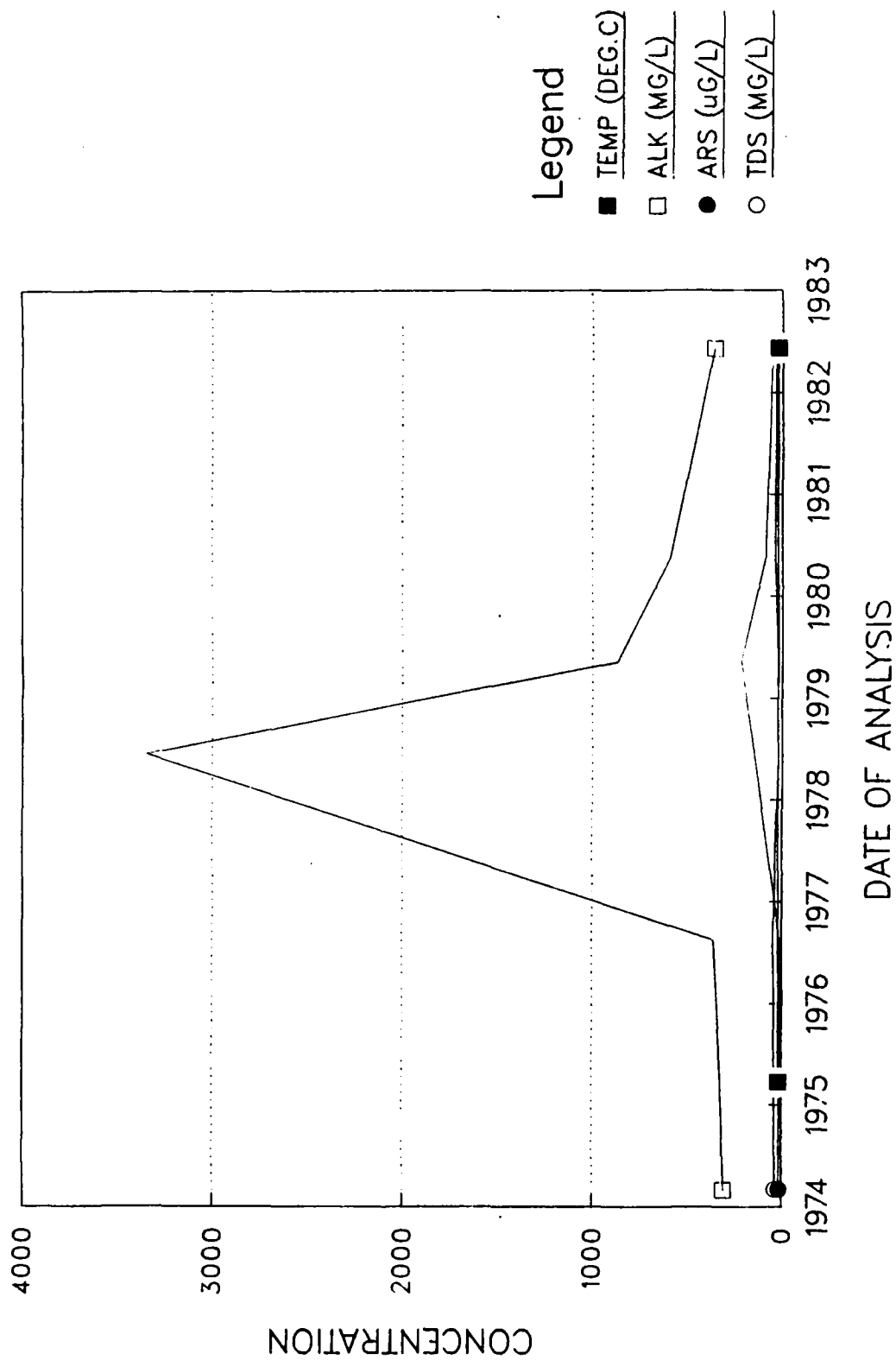
STATION NUMBER 25/40-08A01



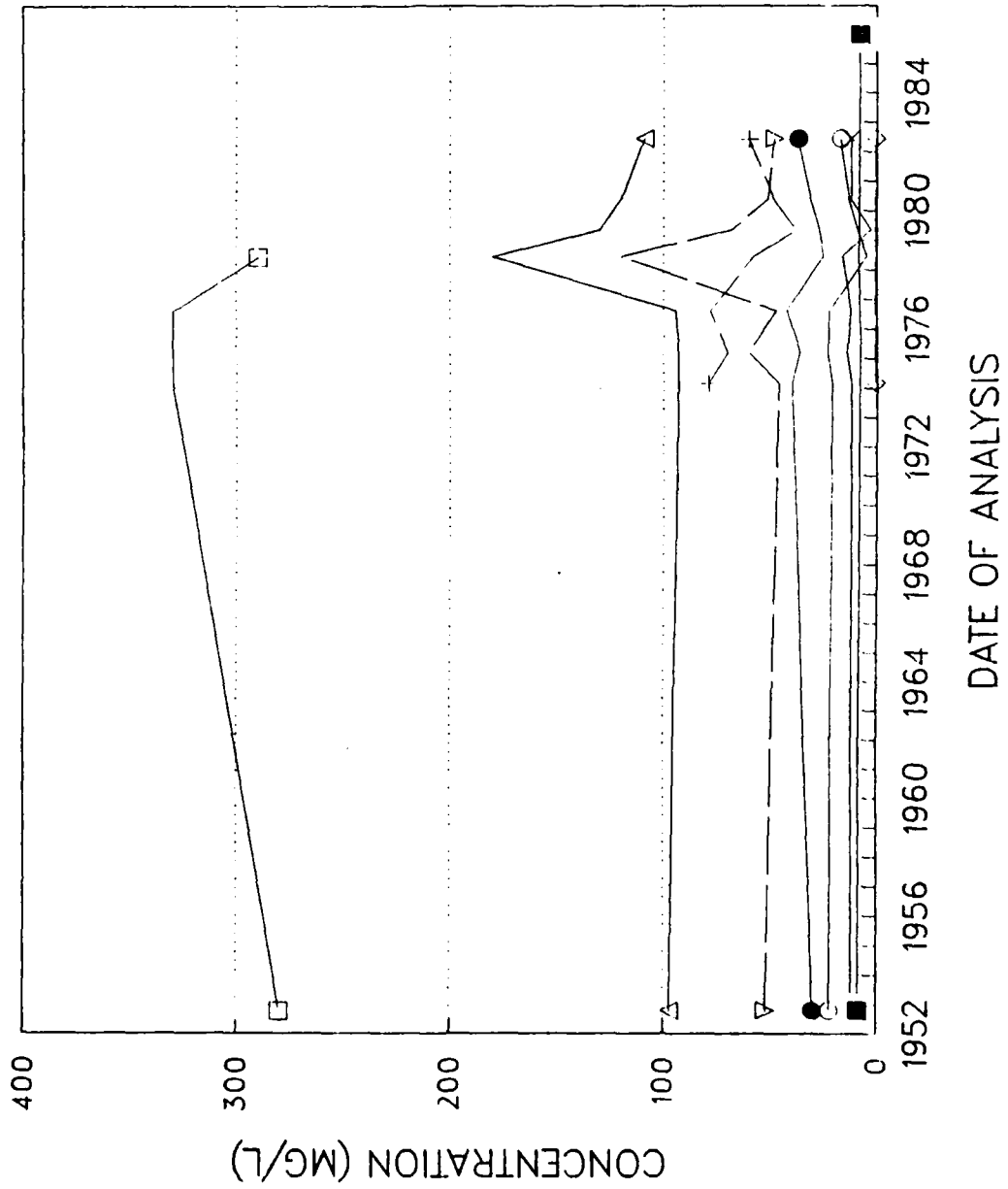
STATION NUMBER 25/40-18R01



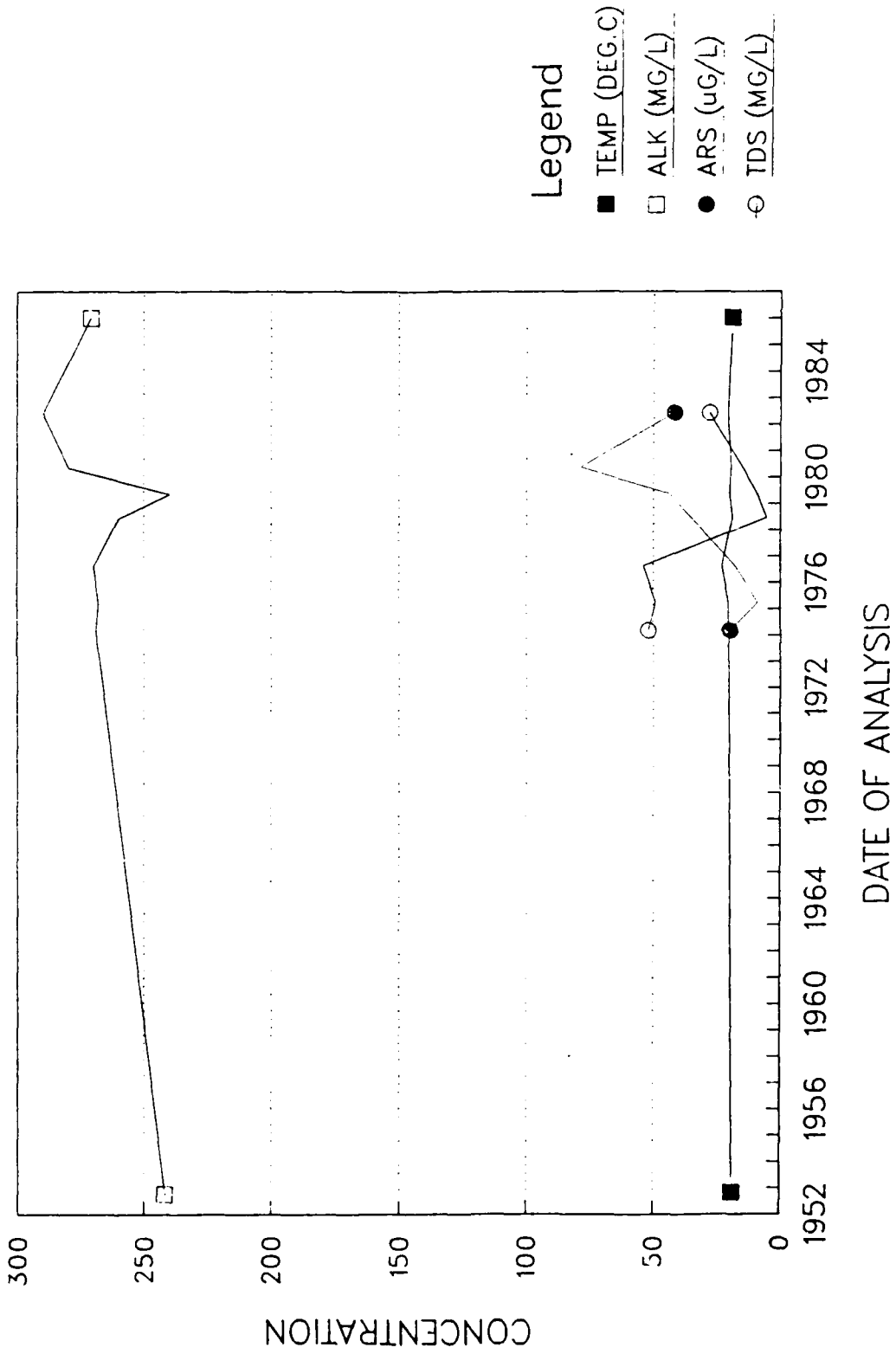
STATION NUMBER 25/40-18R01



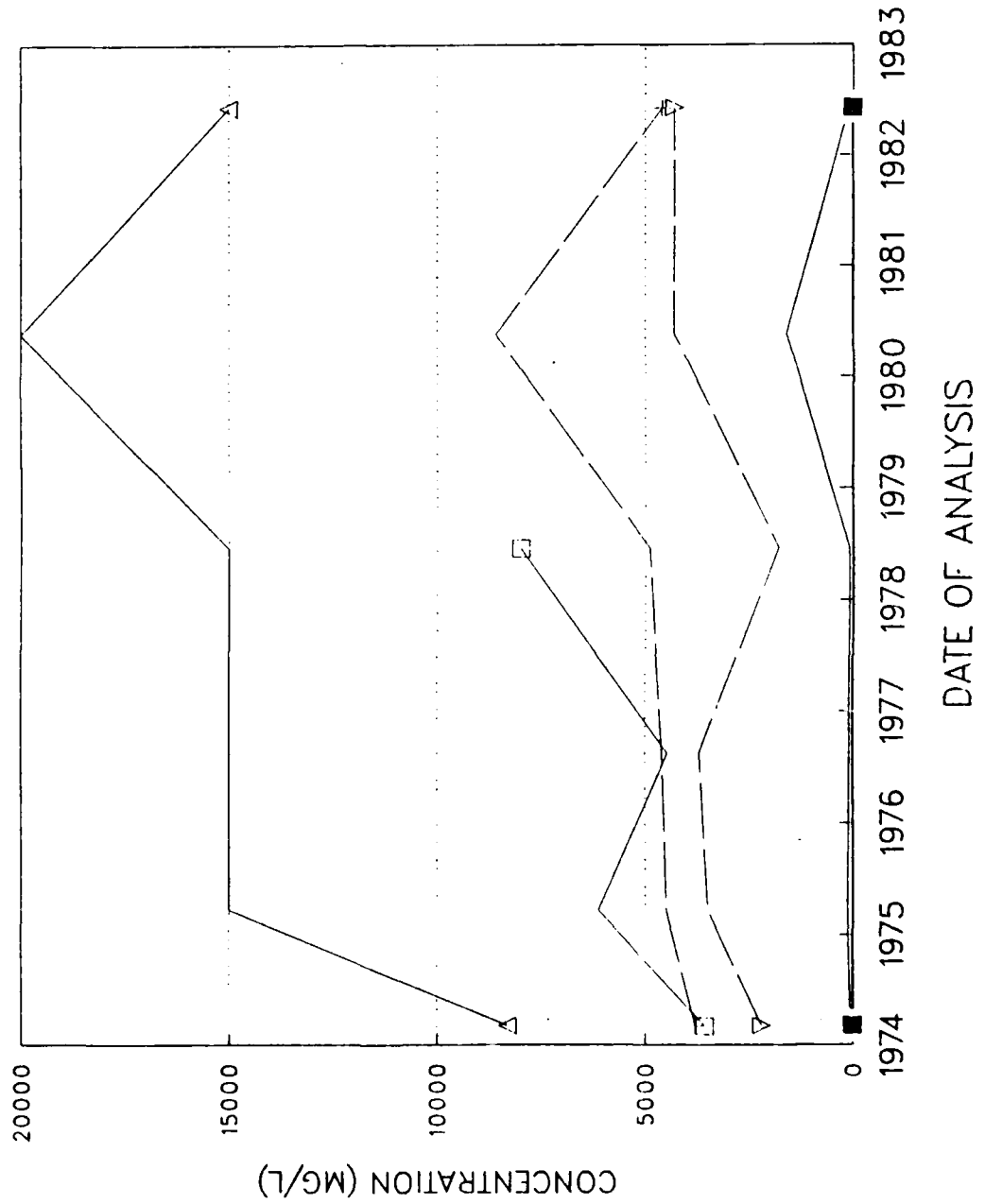
STATION NUMBER 25/40-20F01



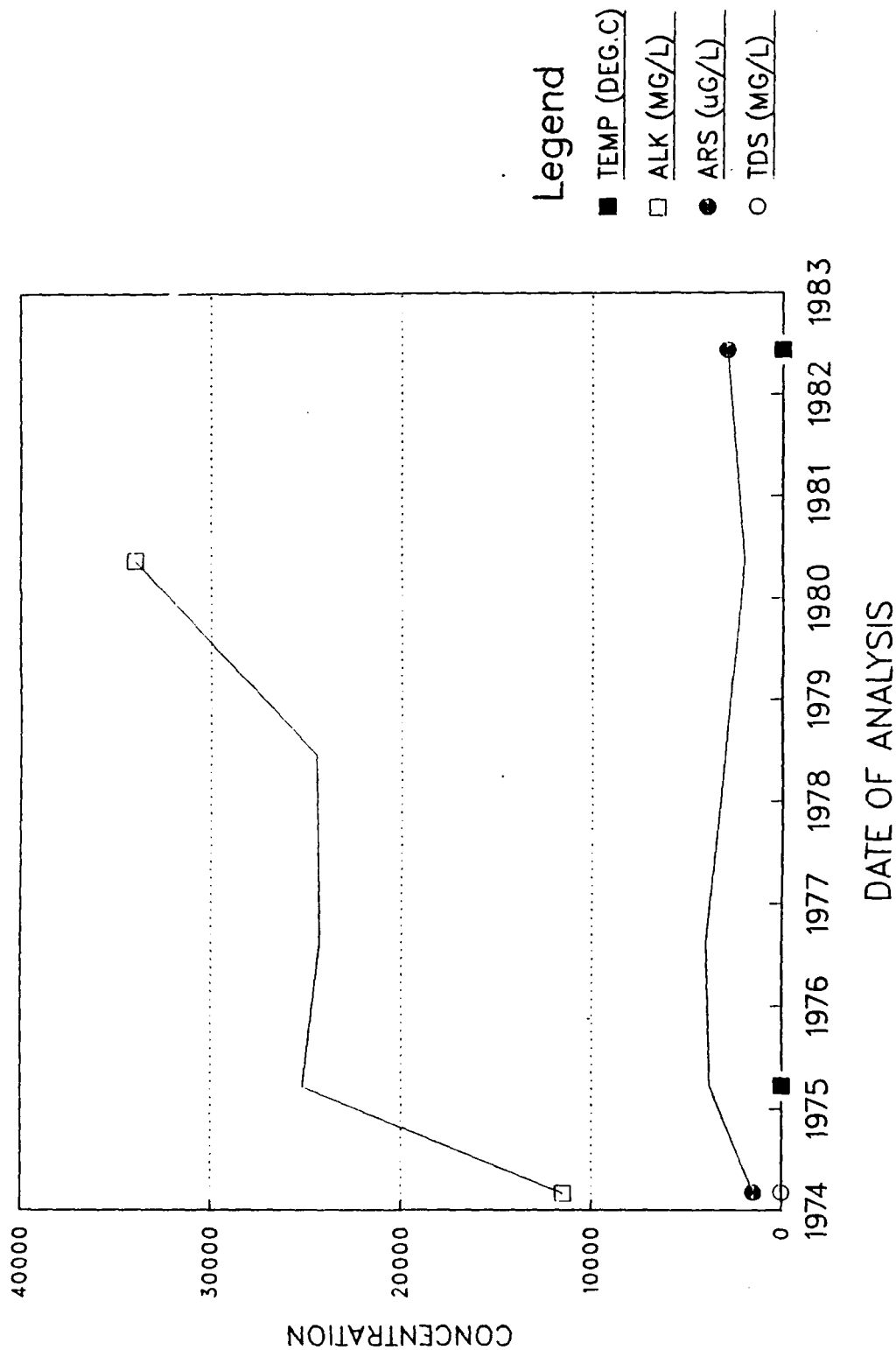
STATION NUMBER 25/40-20F01



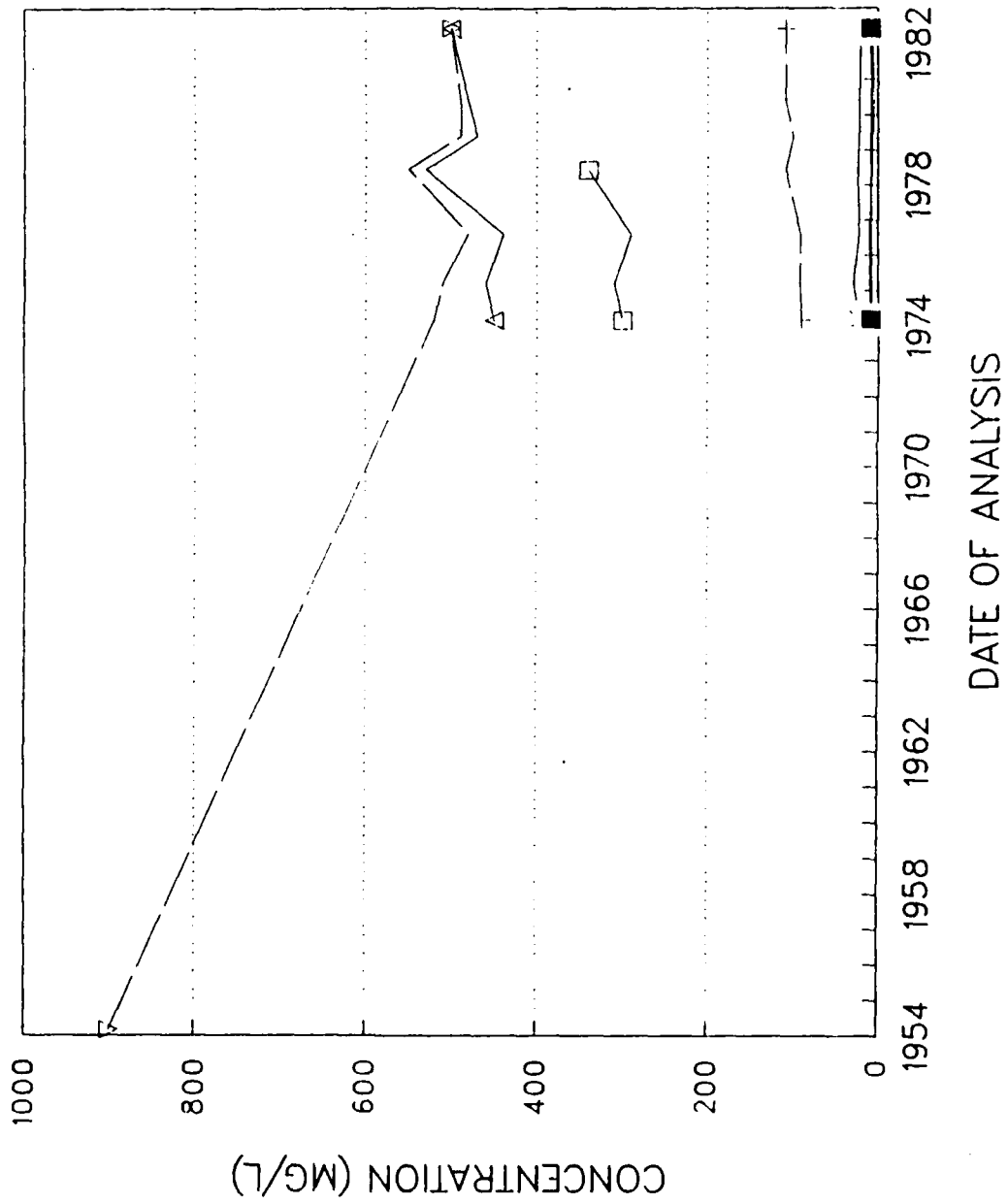
STATION NUMBER 25/40-33L01



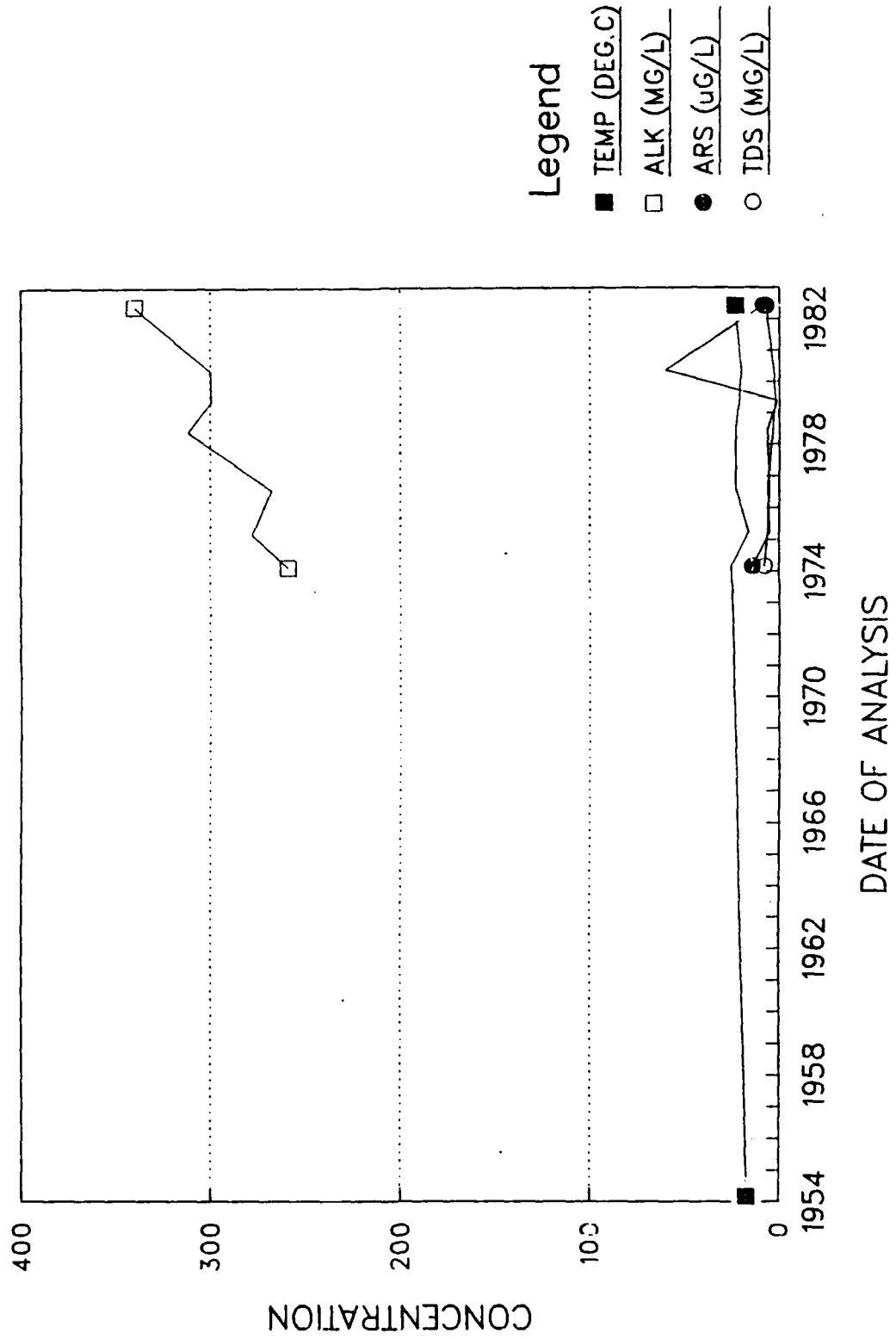
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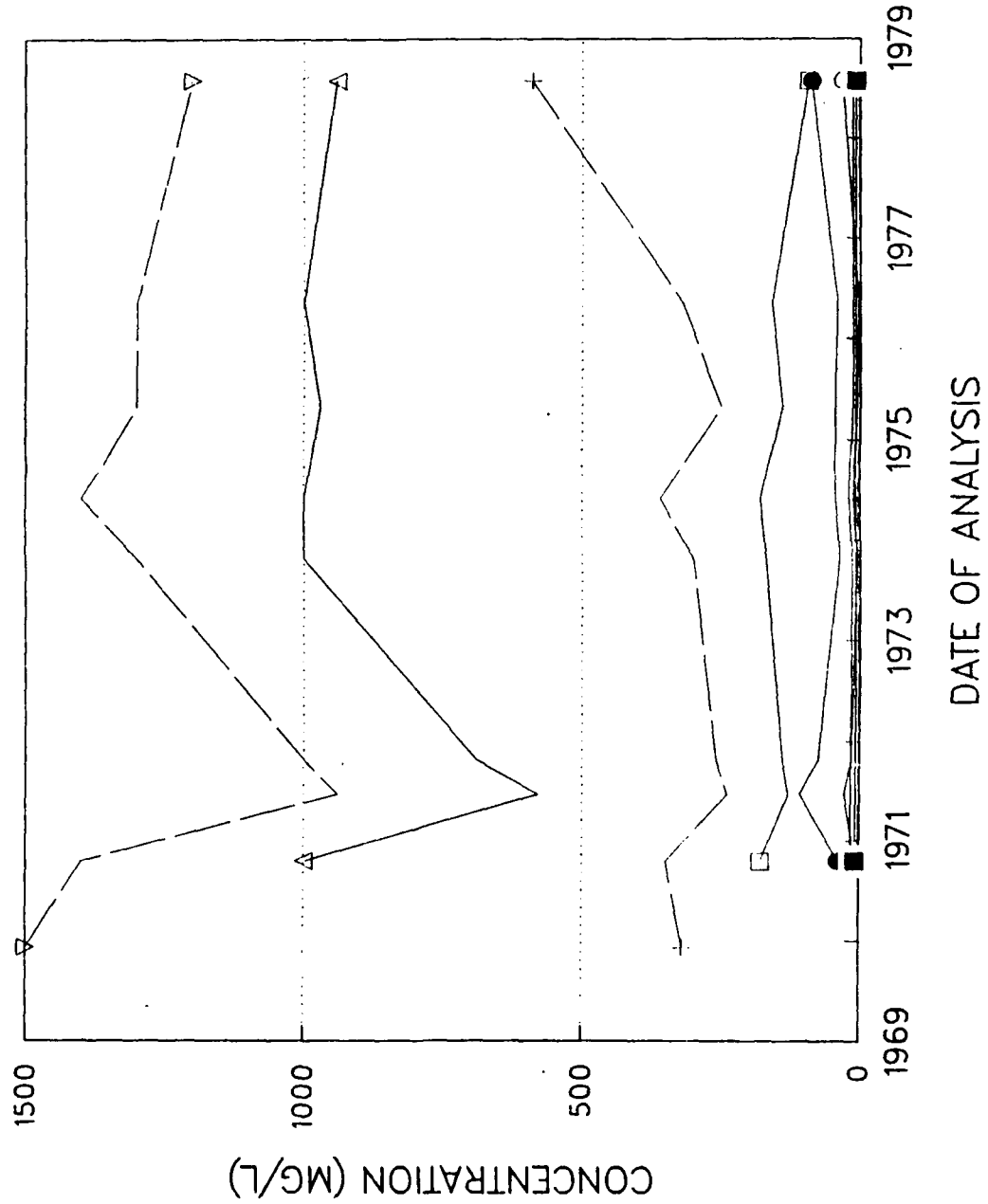
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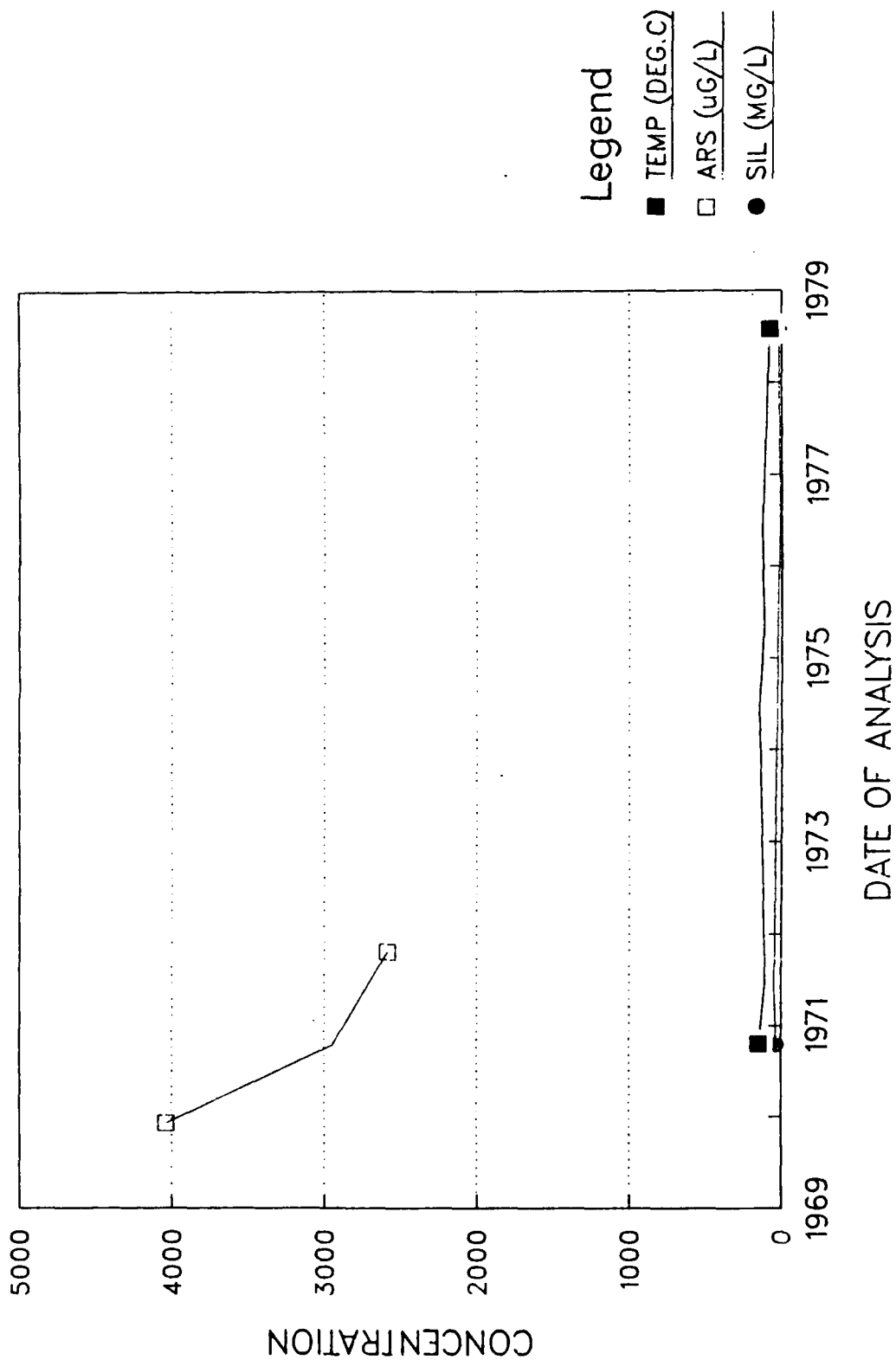
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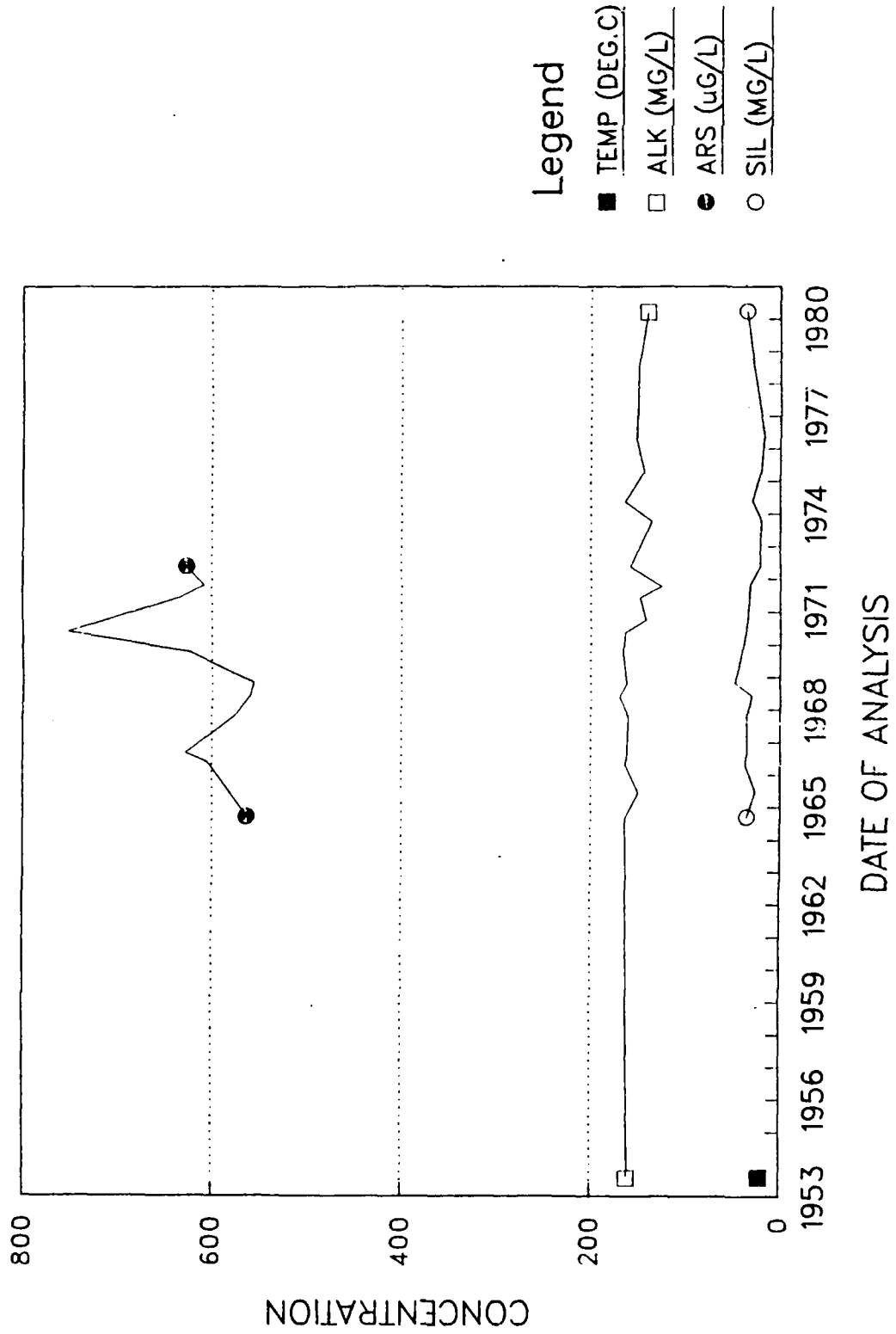
STATION NUMBER 25/41-21E01



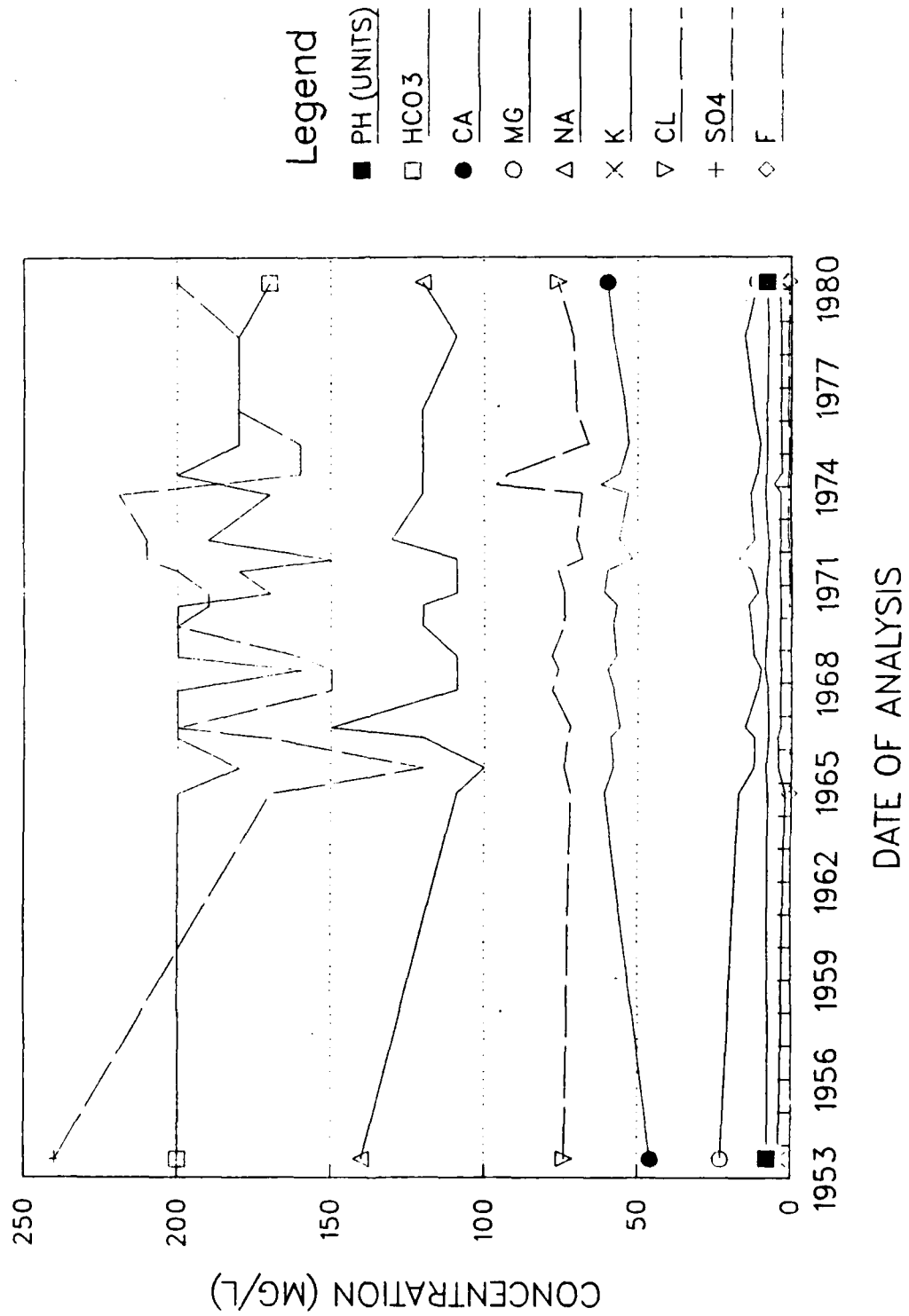
STATION NUMBER 25/41-21E01



STATION NUMBER 26/39-05F01

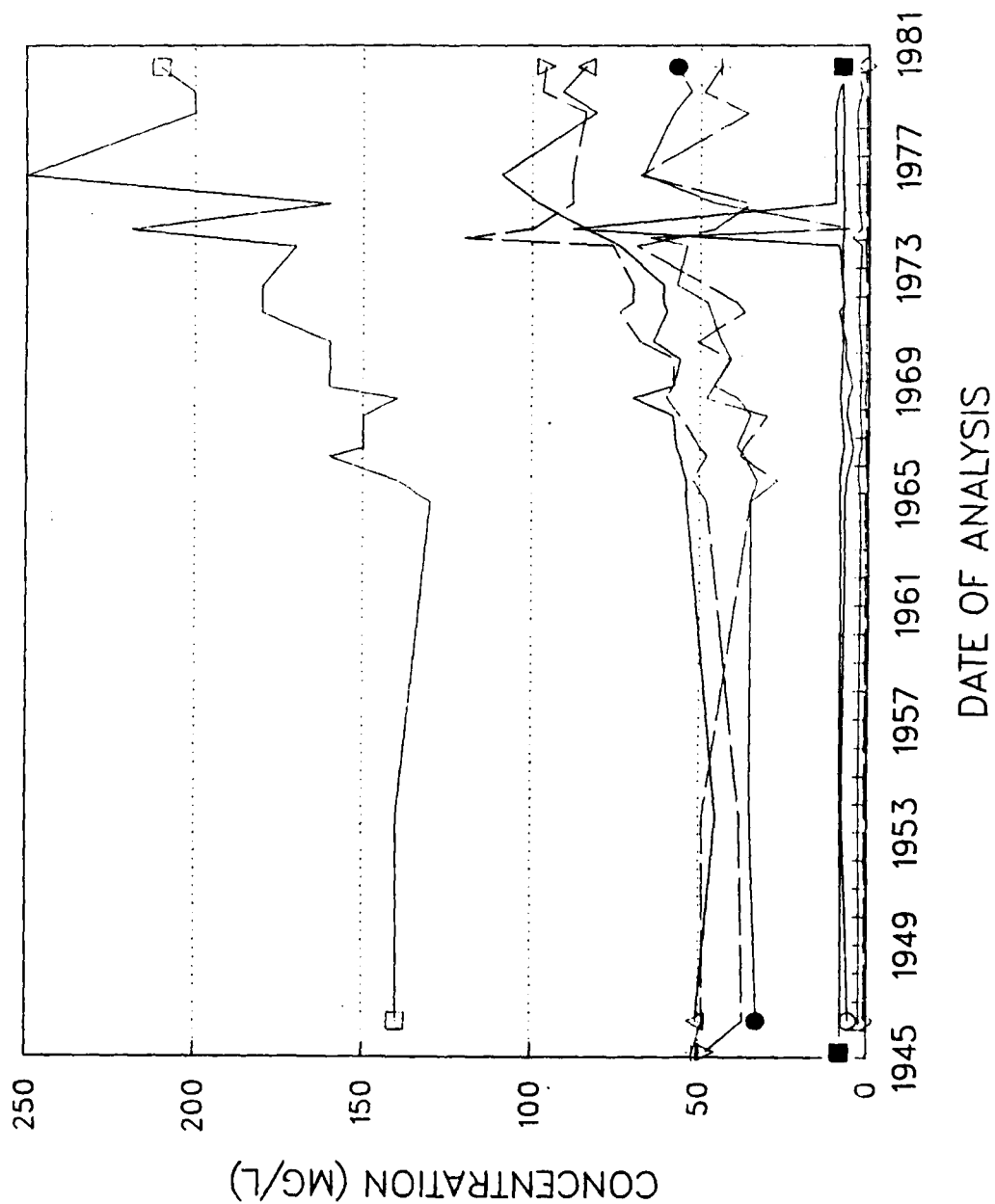


STATION NUMBER 26/39-05F01 2

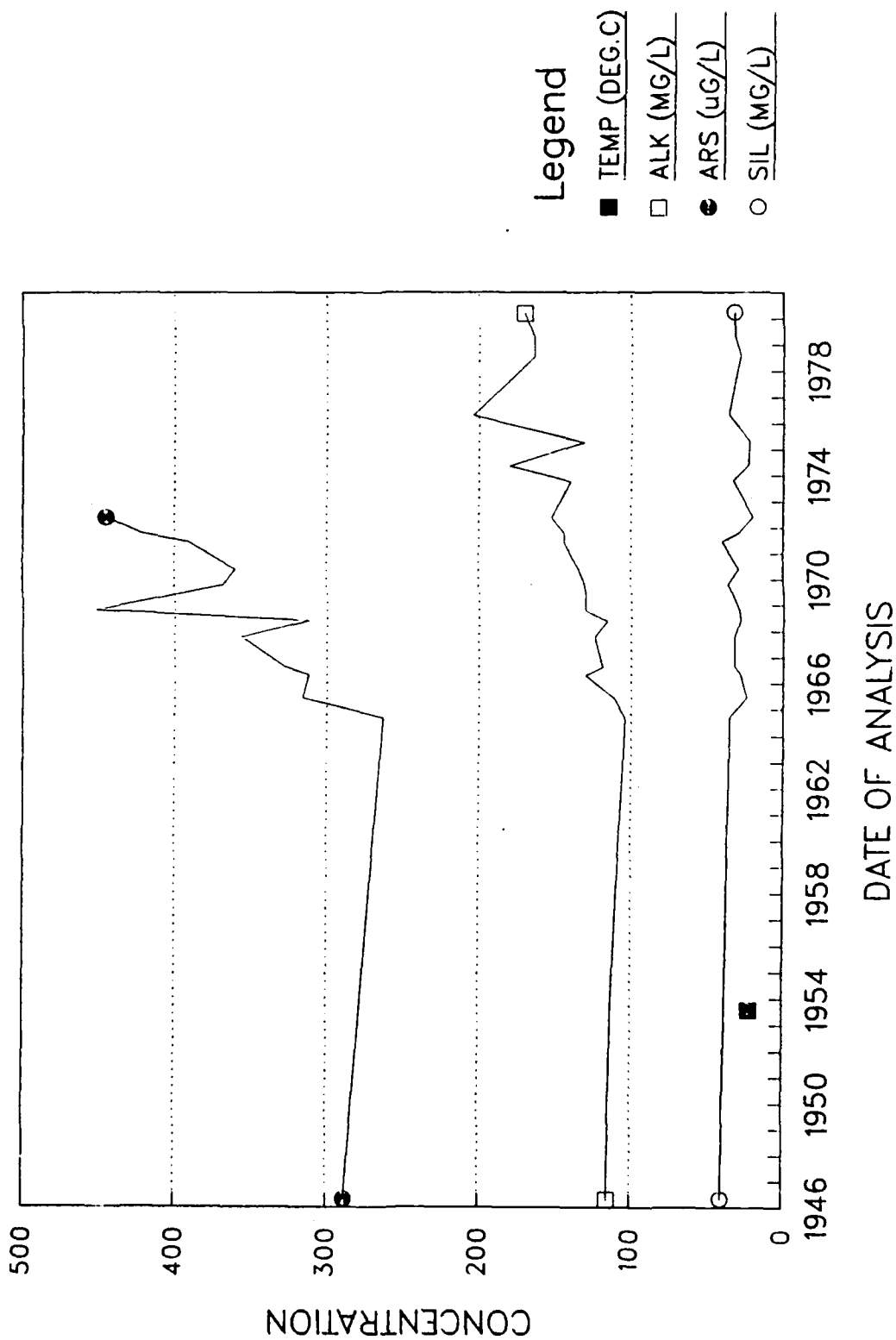


(3)

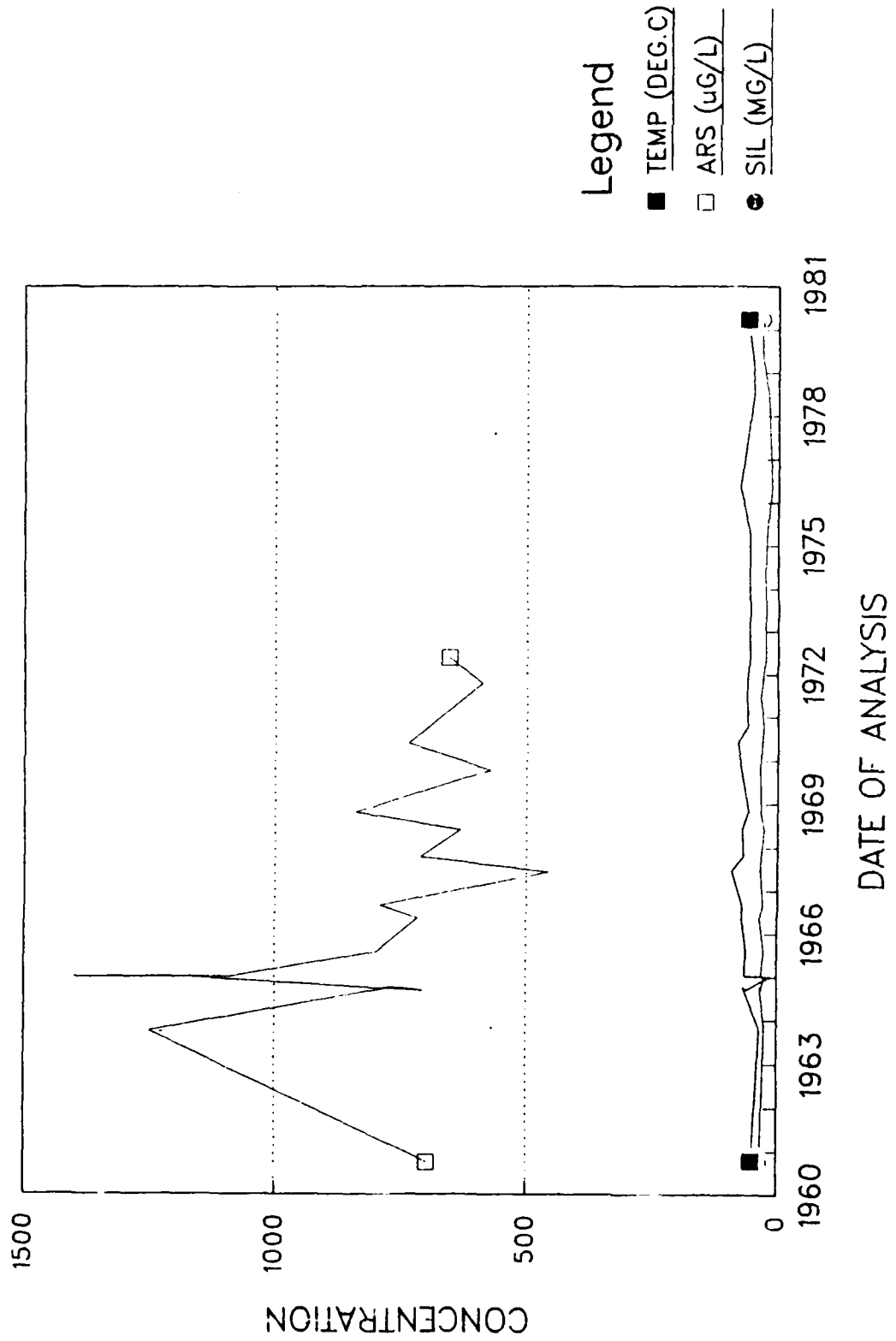
STATION NUMBER 26/30-11E01



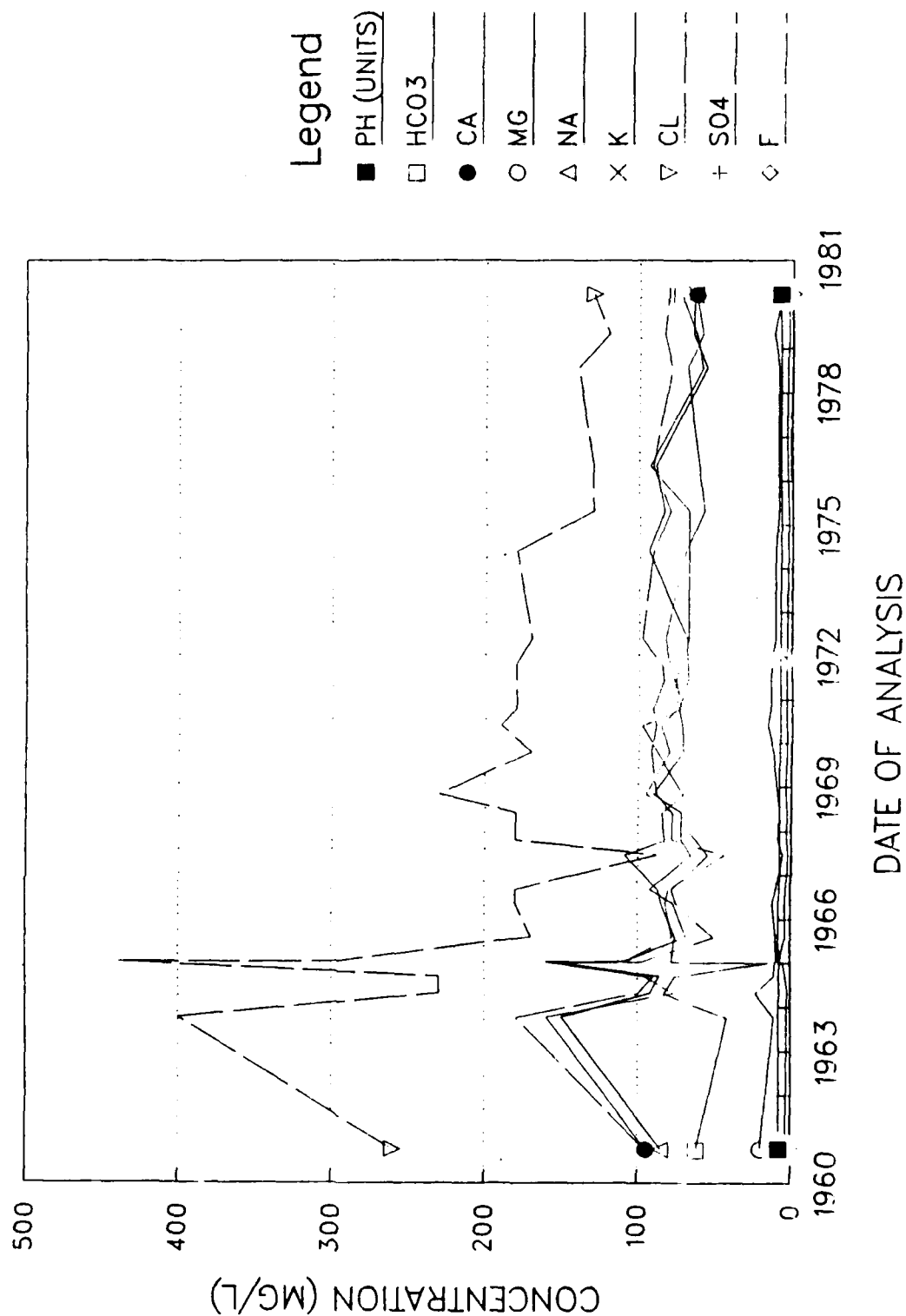
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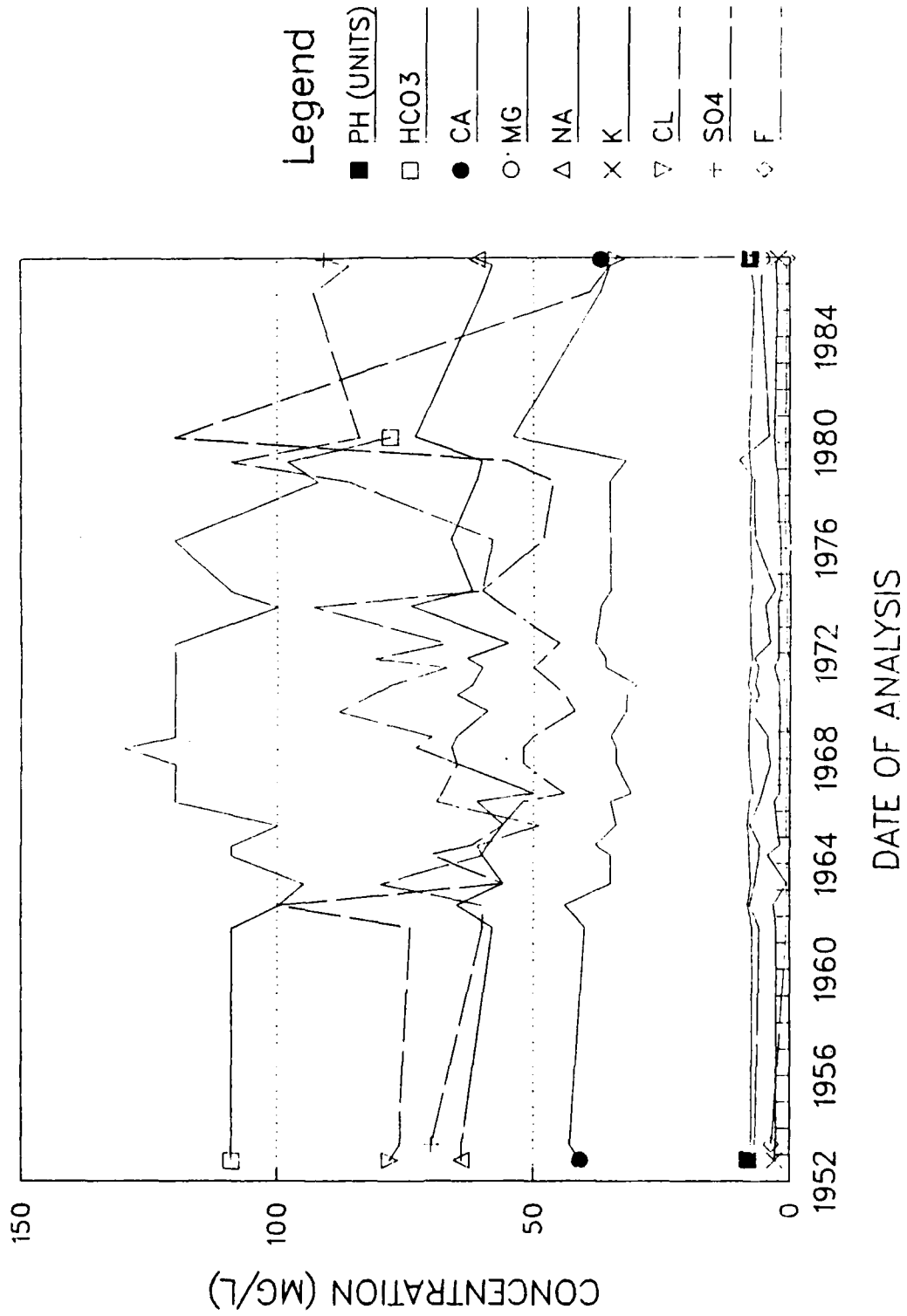
STATION NUMBER 26/39-19K01 2



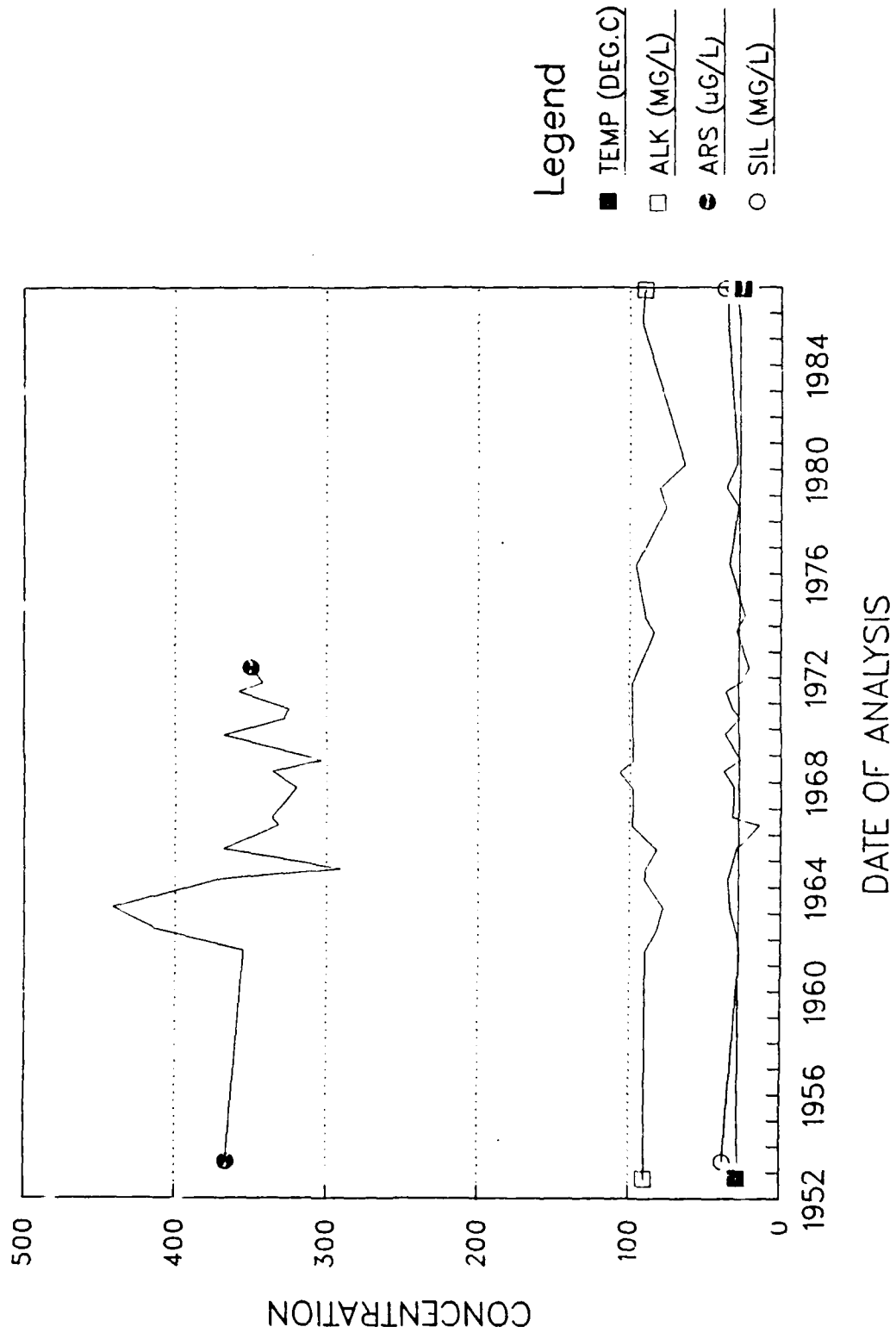
STATION NUMBER 26/39-19K01



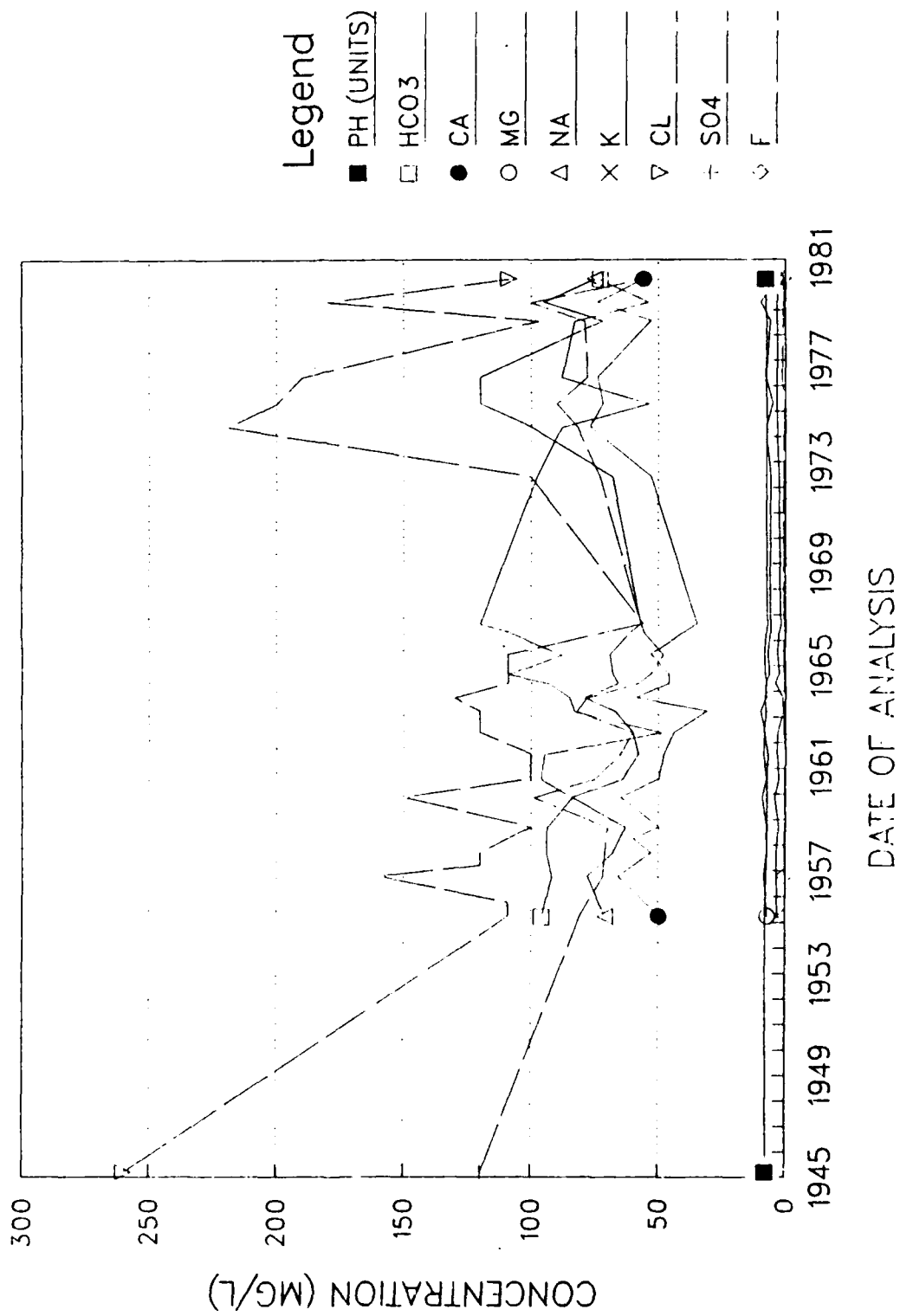
STATION NUMBER 26/39-19P01 Z



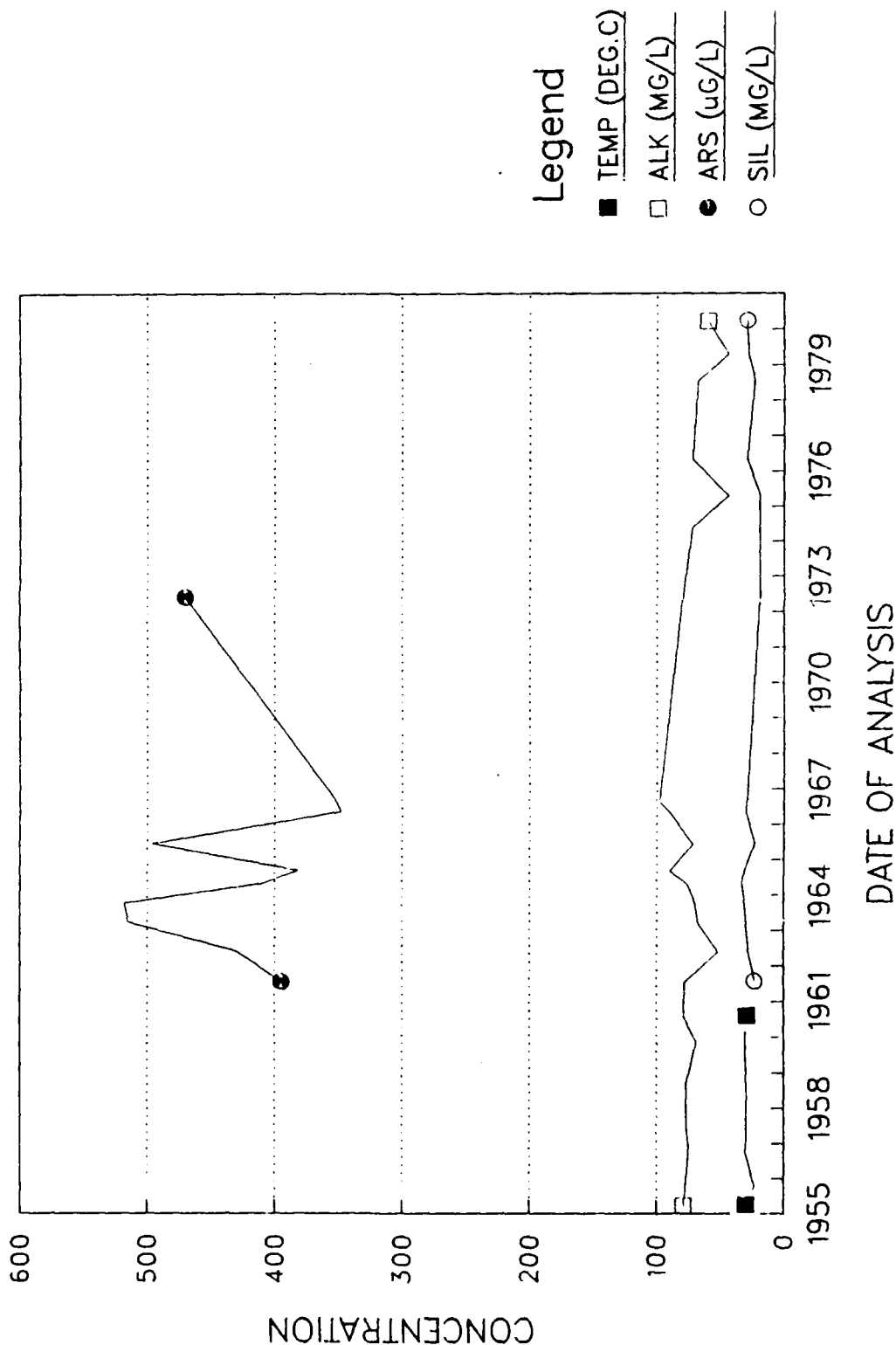
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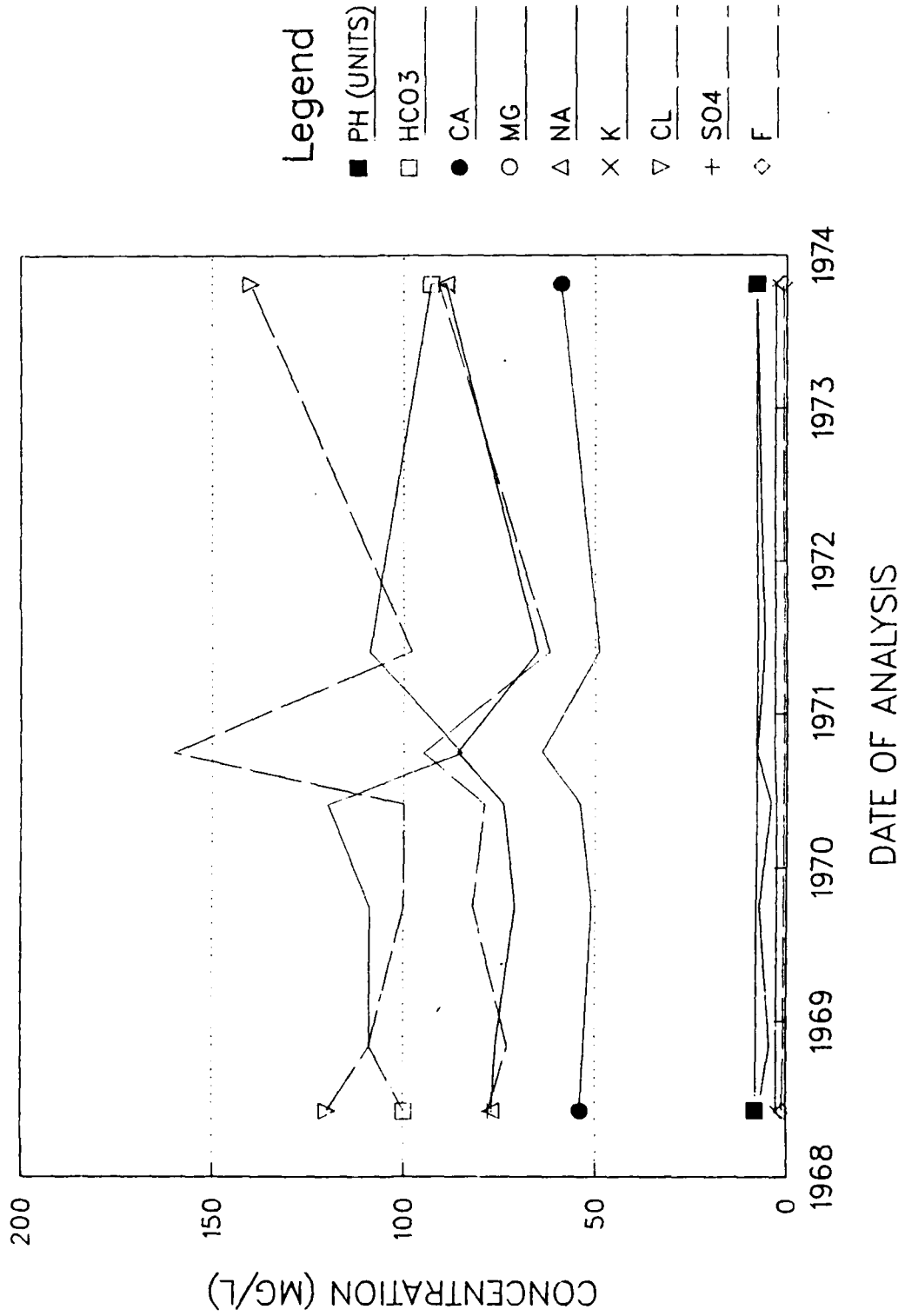
STATION NUMBER 26/39-19Q01 2



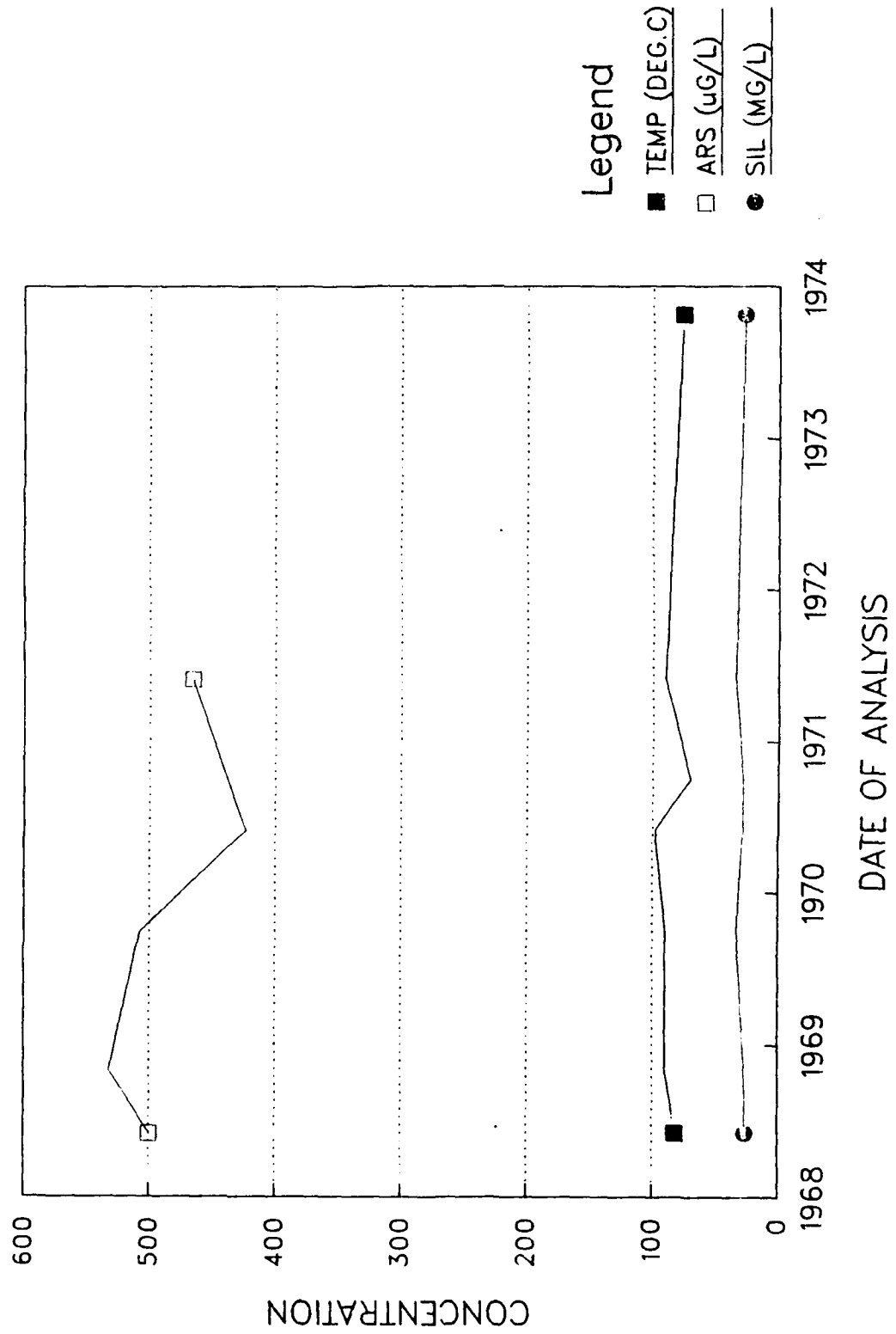
STATION NUMBER 26/39-19Q01



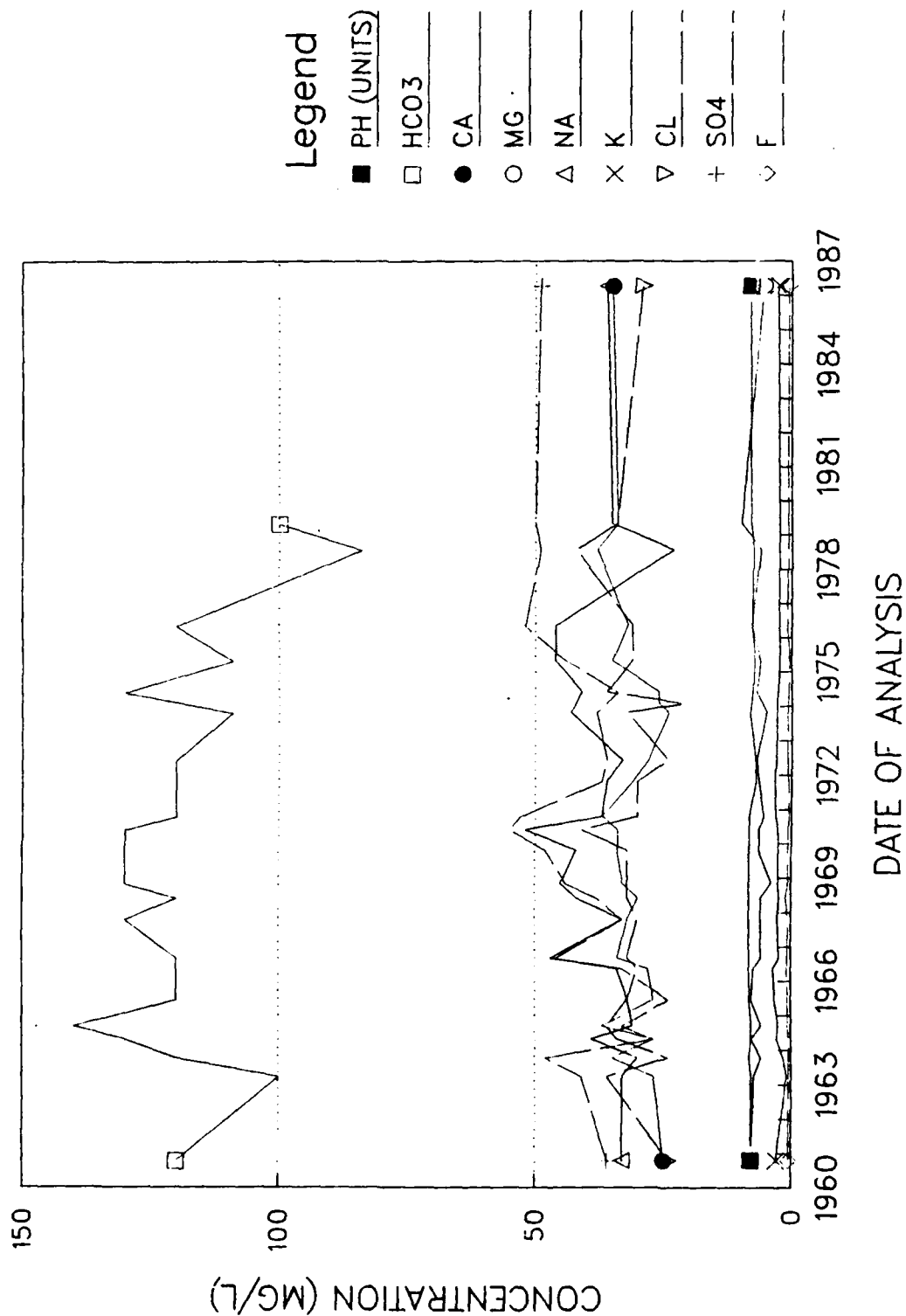
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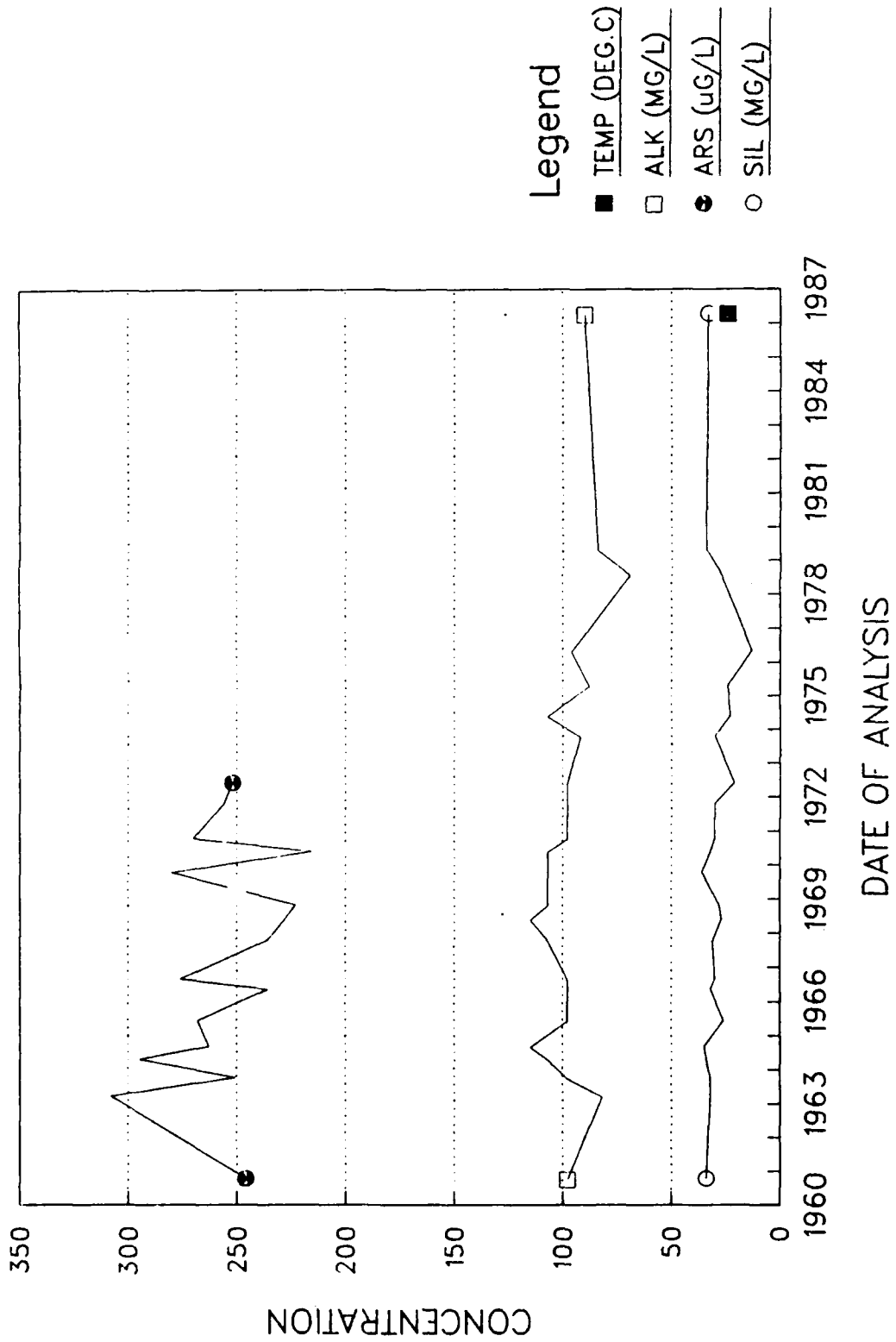
STATION NUMBER 26/39--19Q02



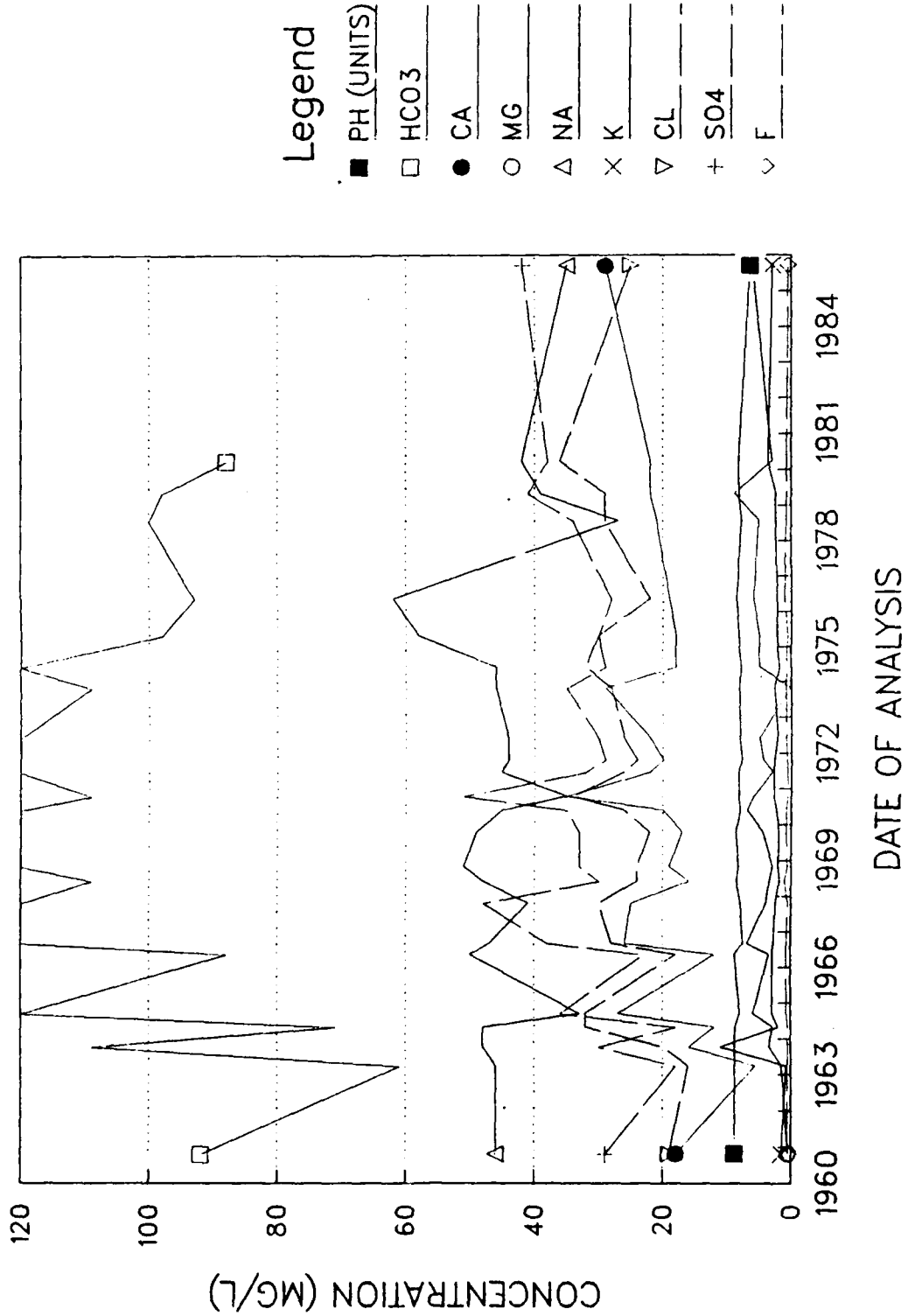
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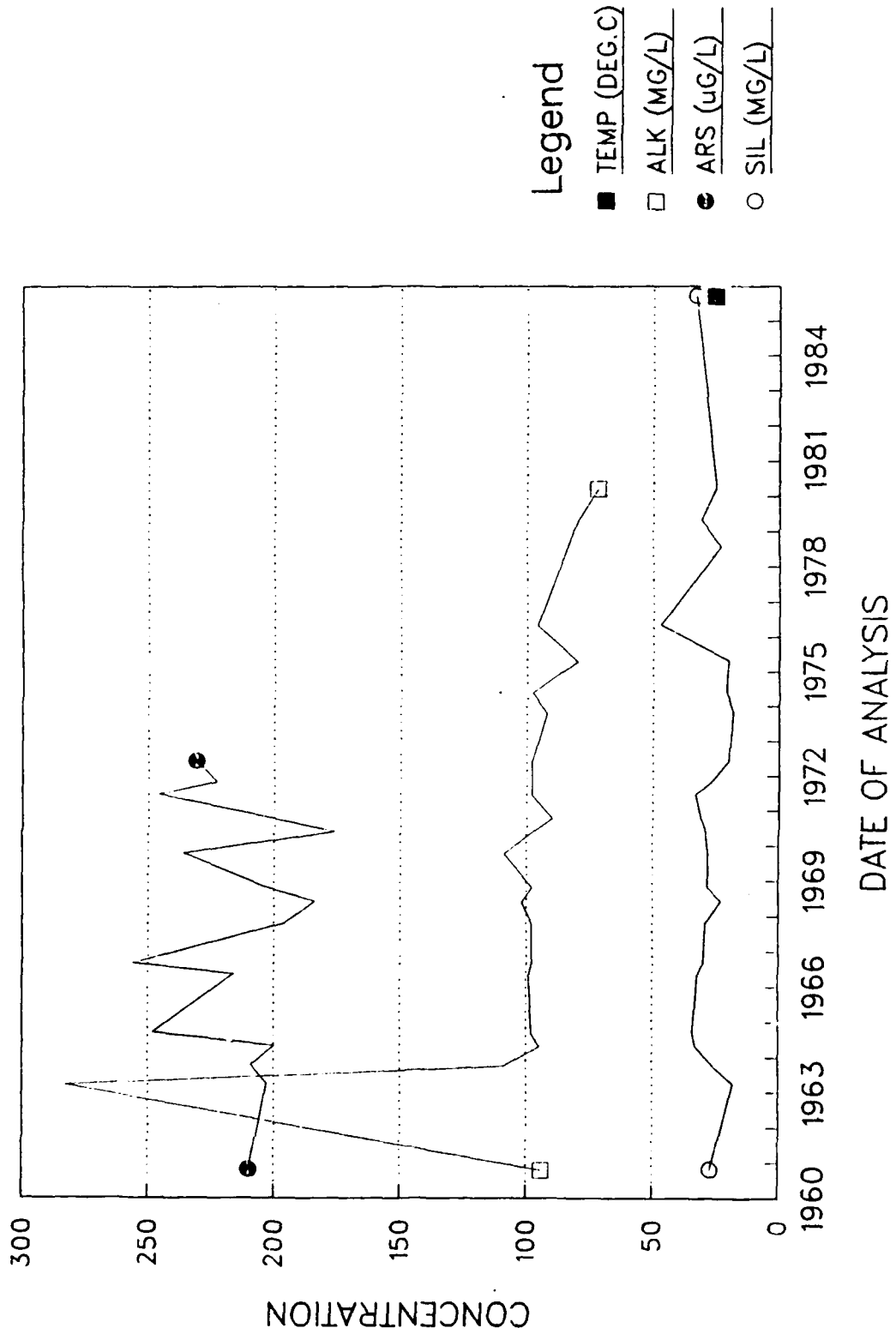
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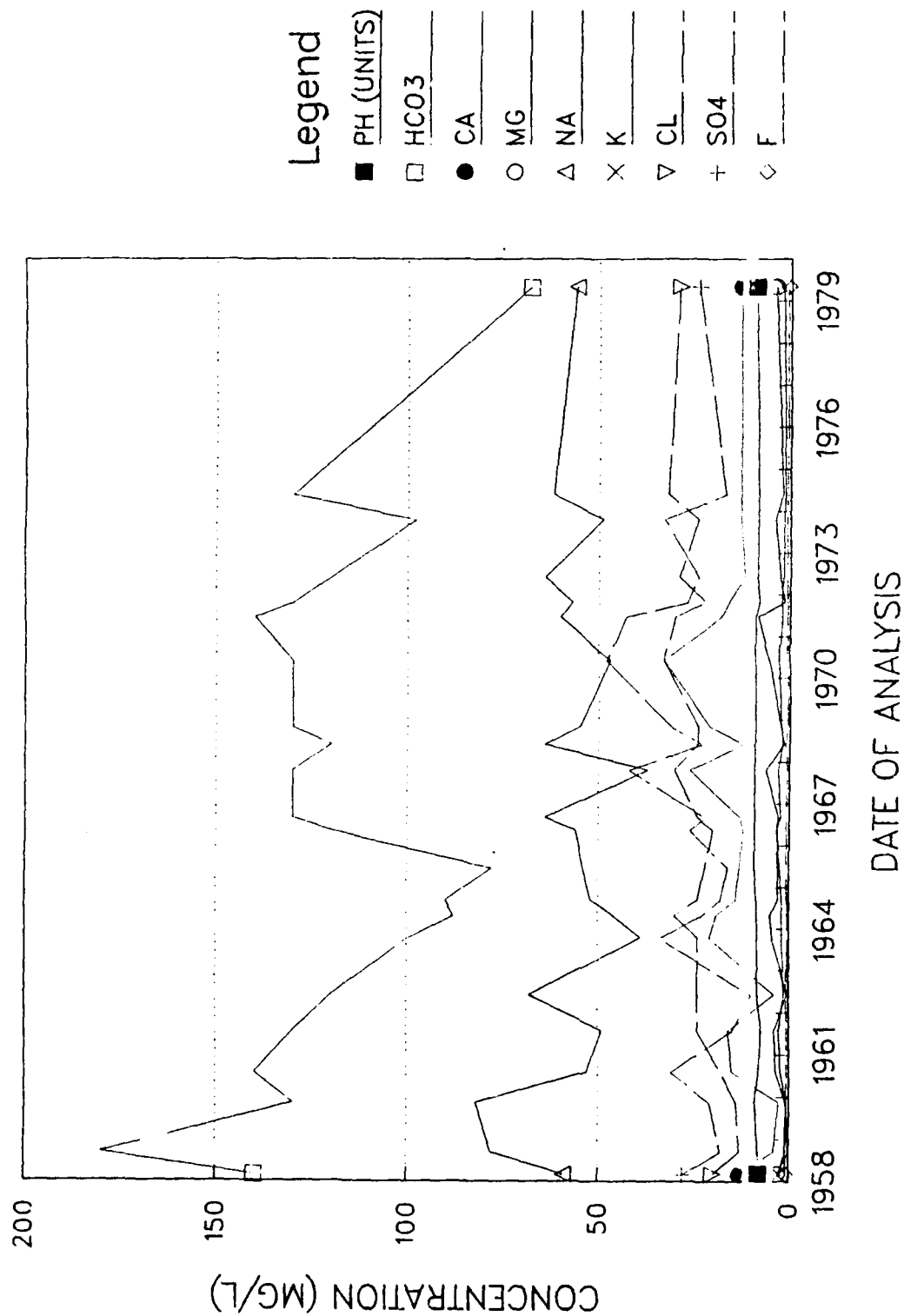
STATION NUMBER 26/39-24M01 Z



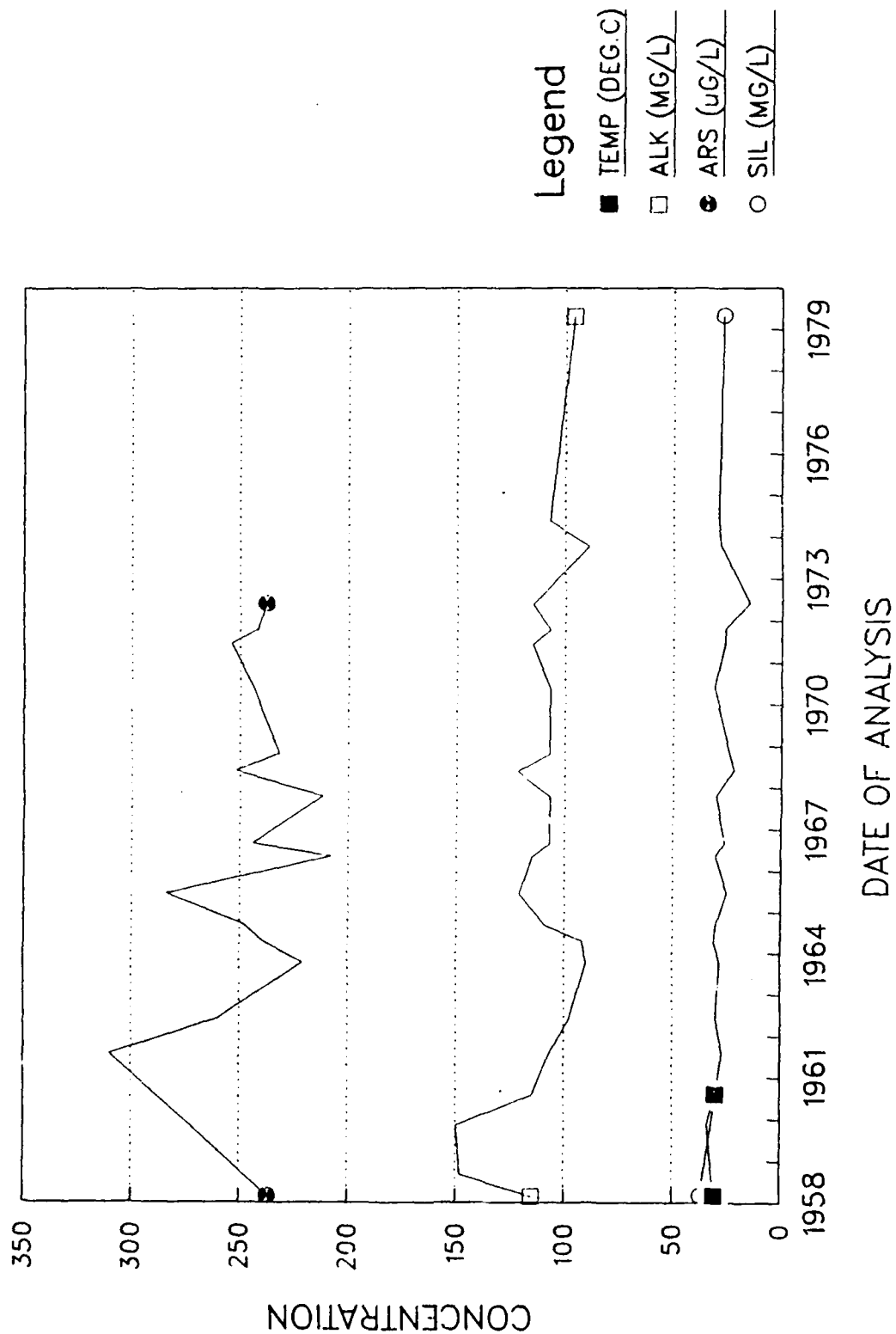
STATION NUMBER 26/39--24M01



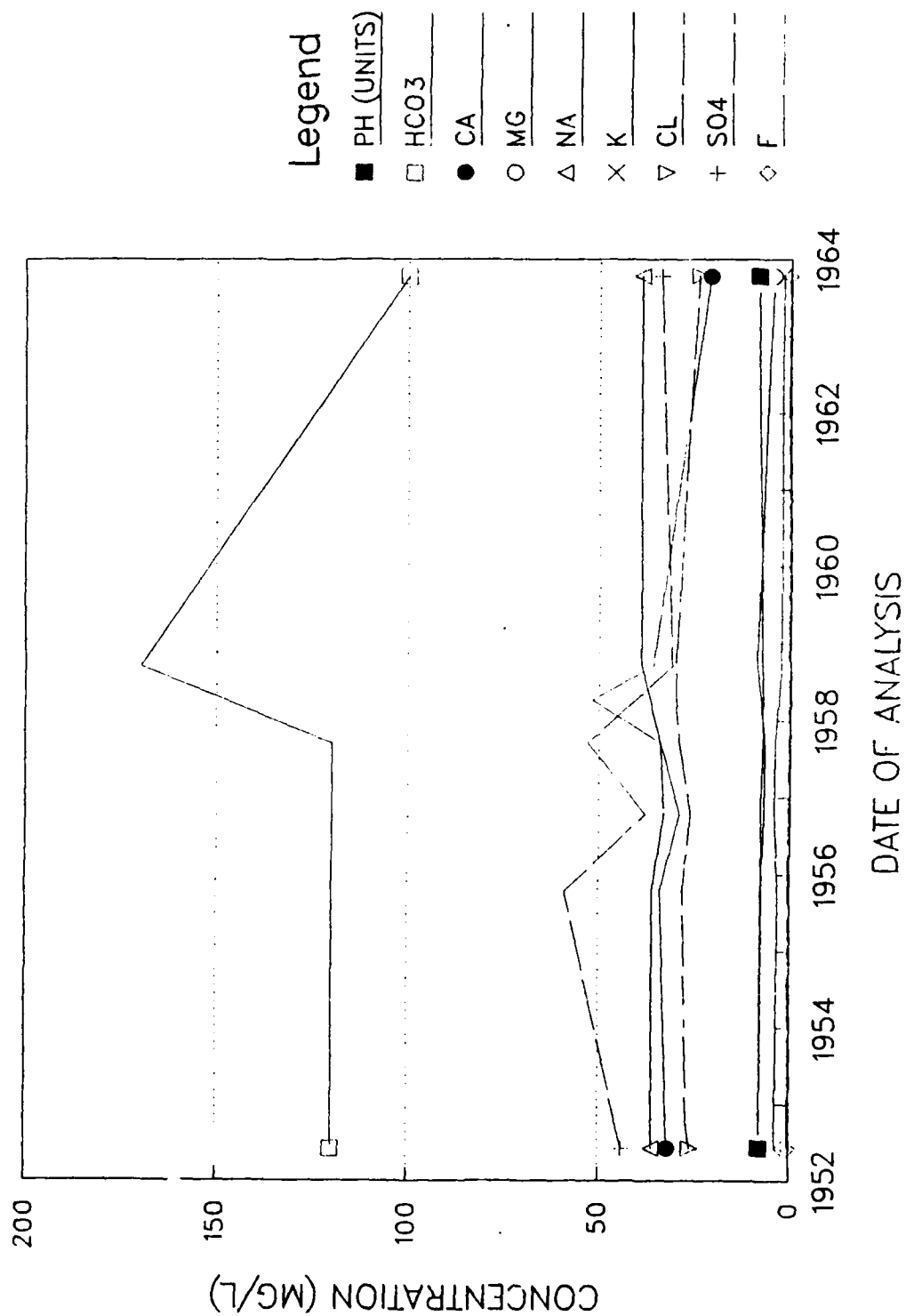
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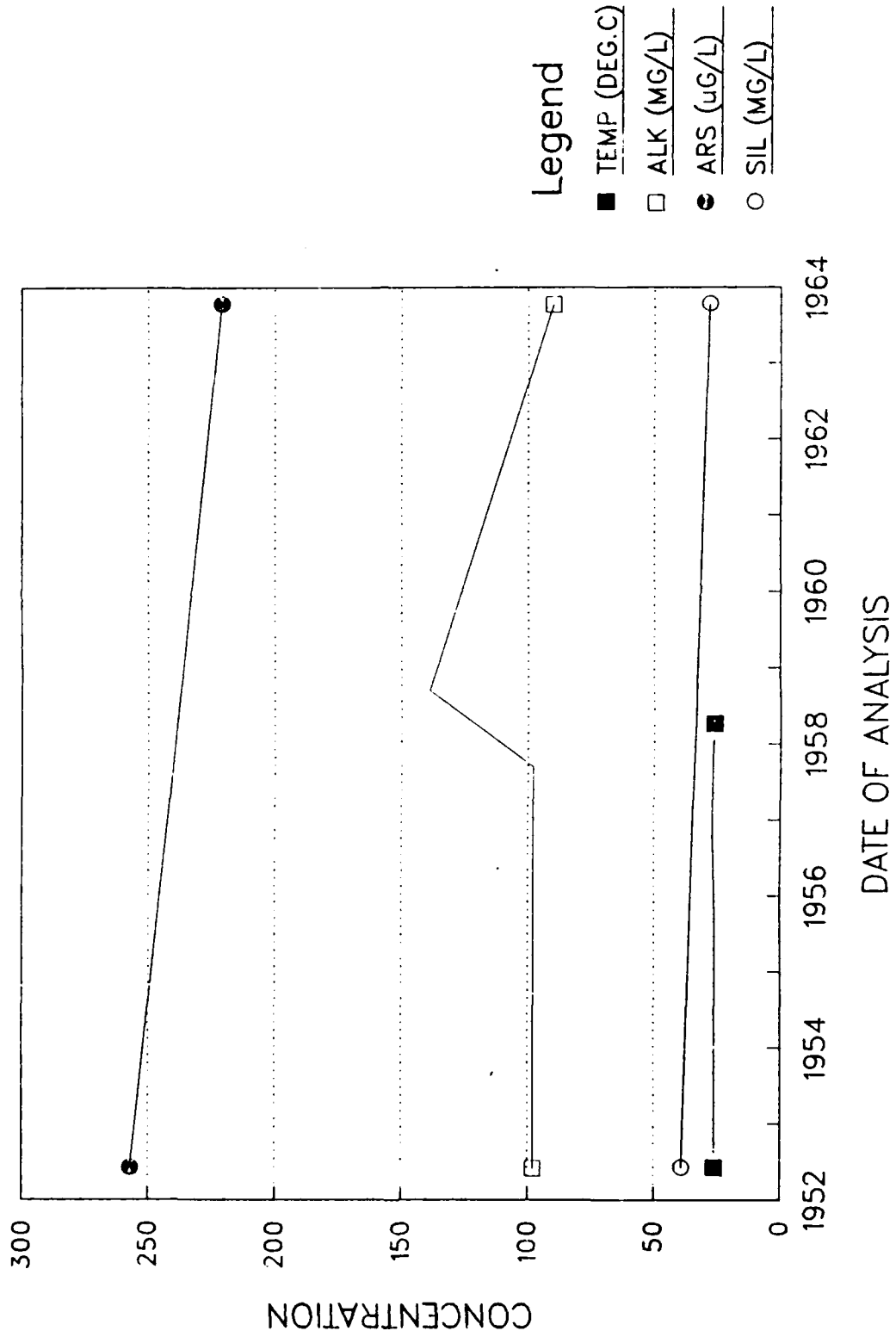
STATION NUMBER 26/39-24P01



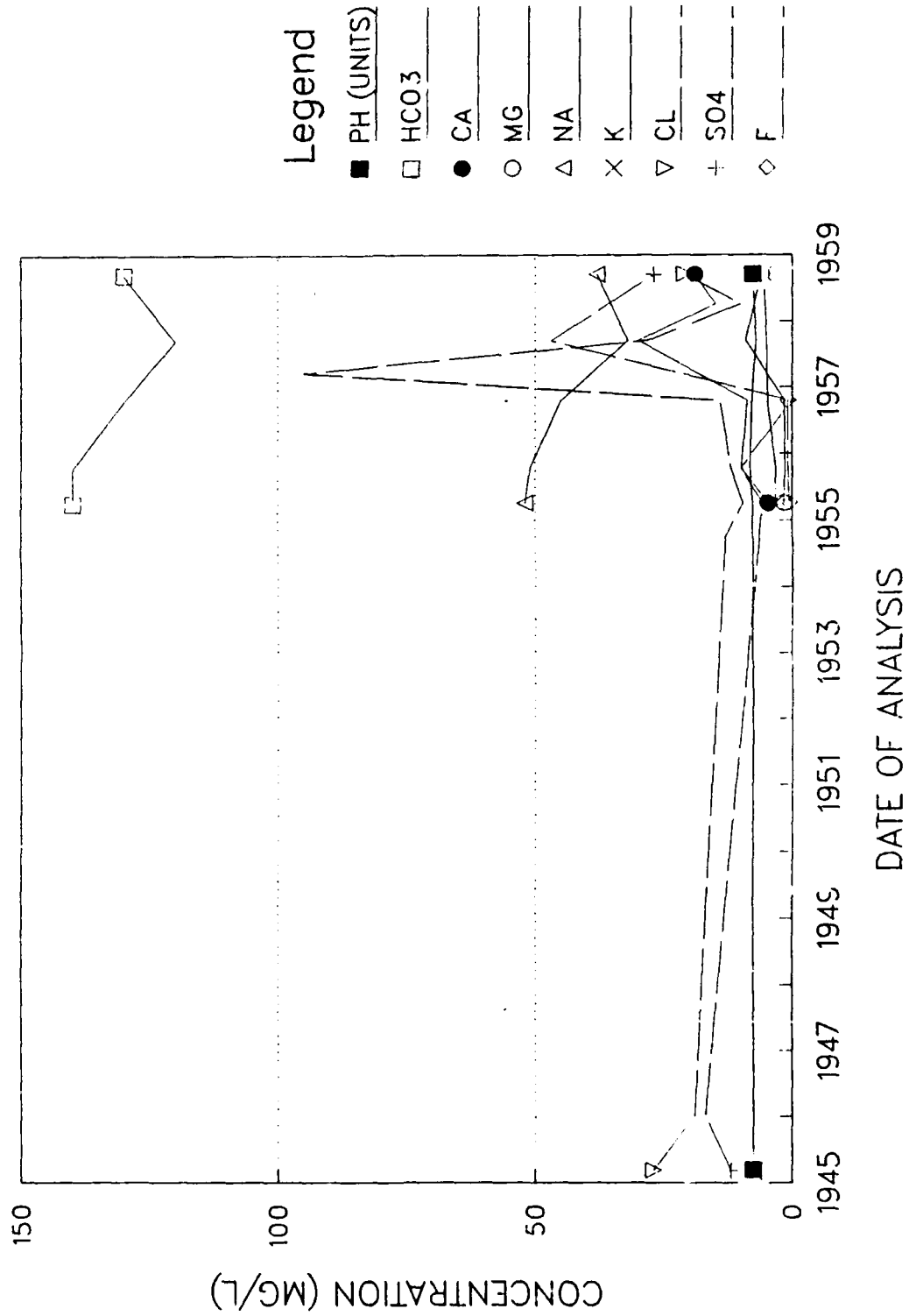
STATION NUMBER 26/39-24Q01 2



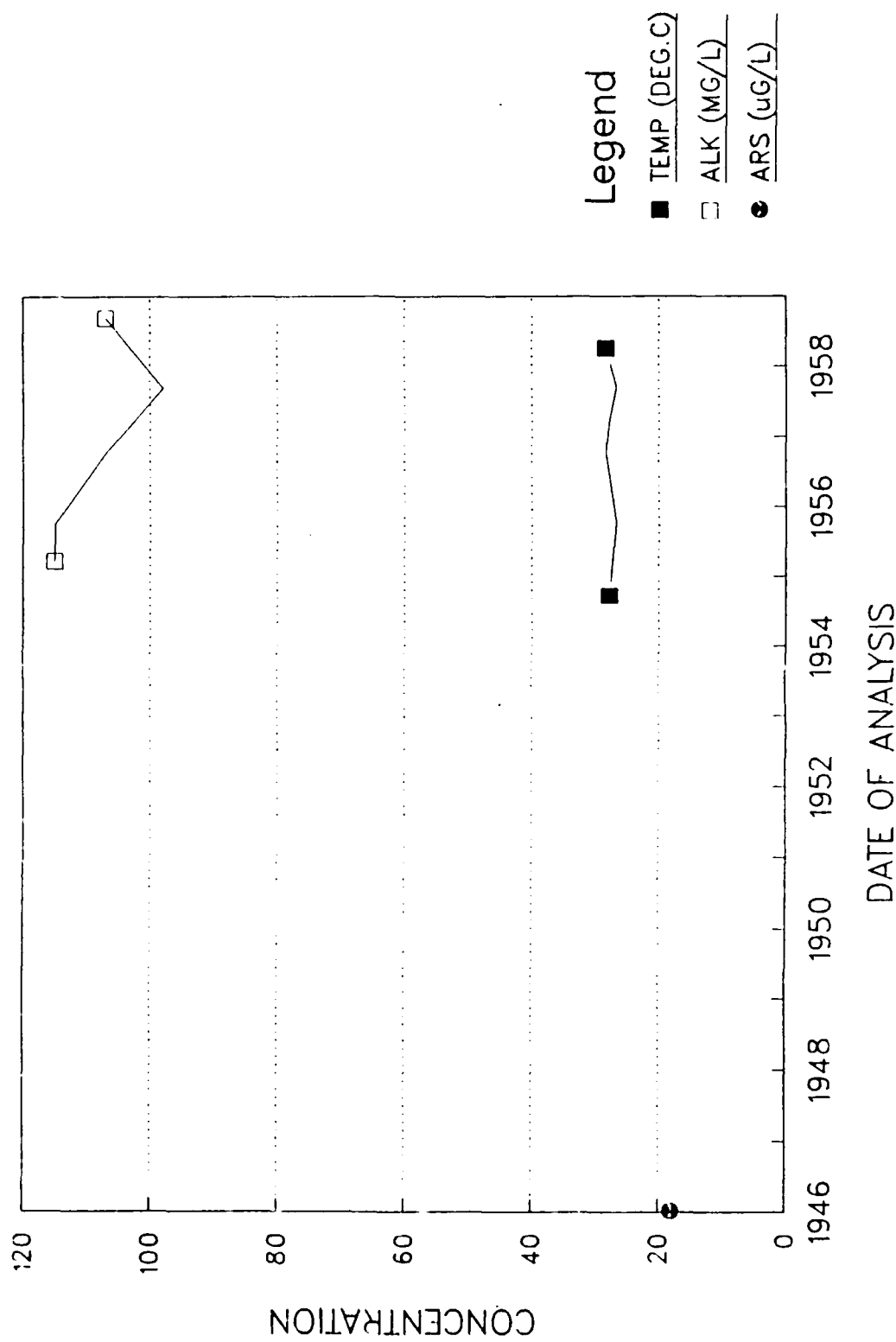
STATION NUMBER 26/39-24Q01



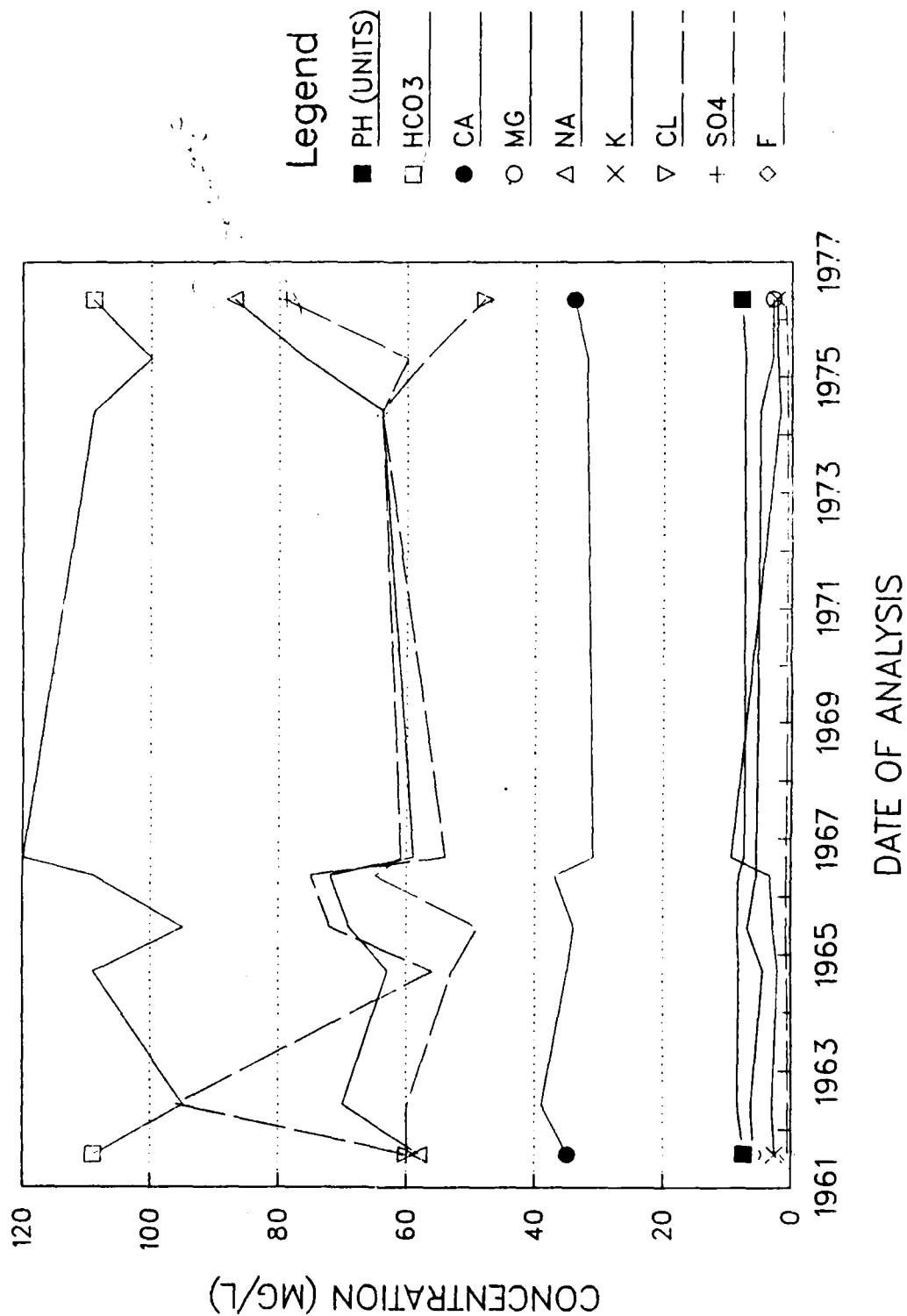
STATION NUMBER 26/39-24R01 3



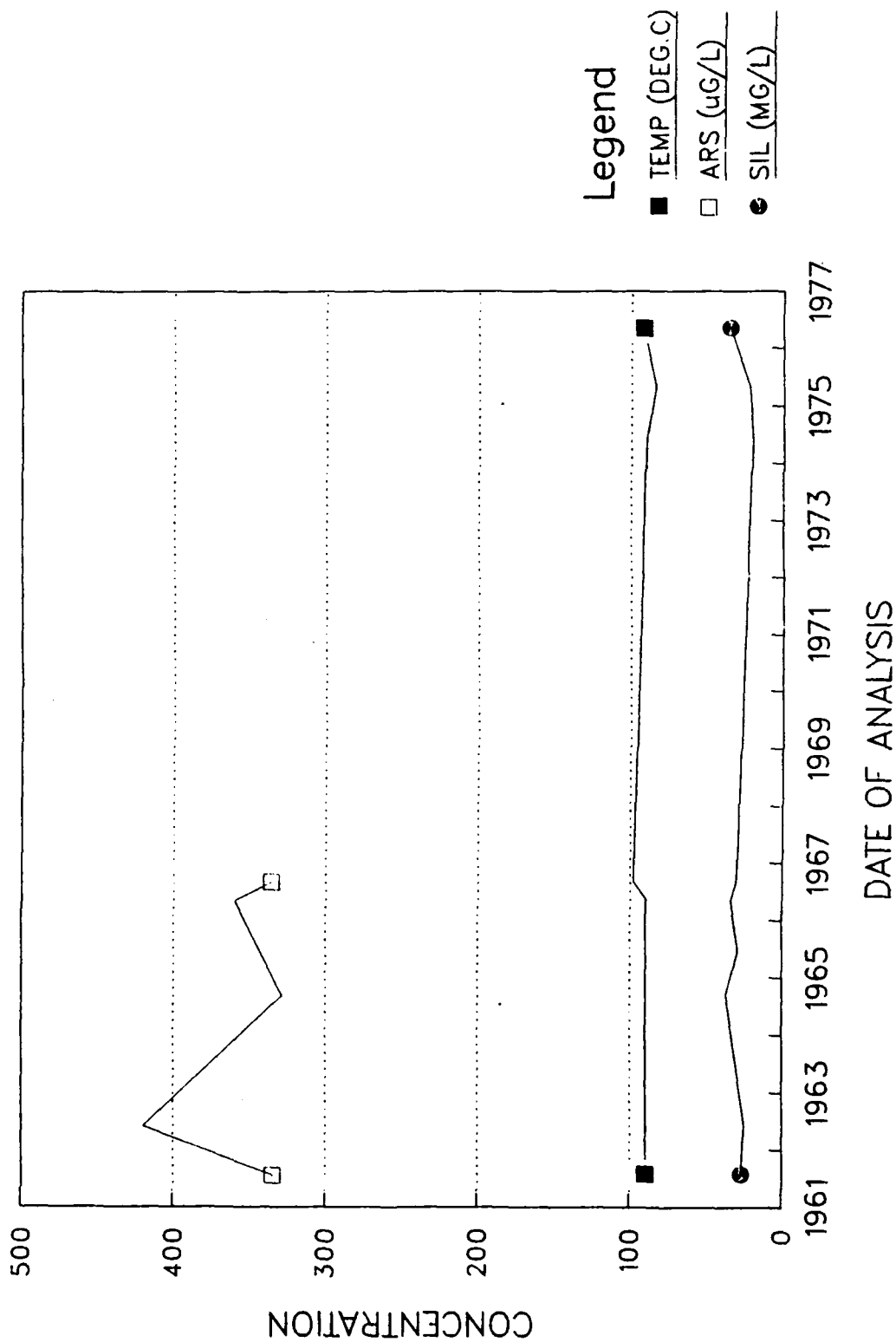
STATION NUMBER 26/39-24R01



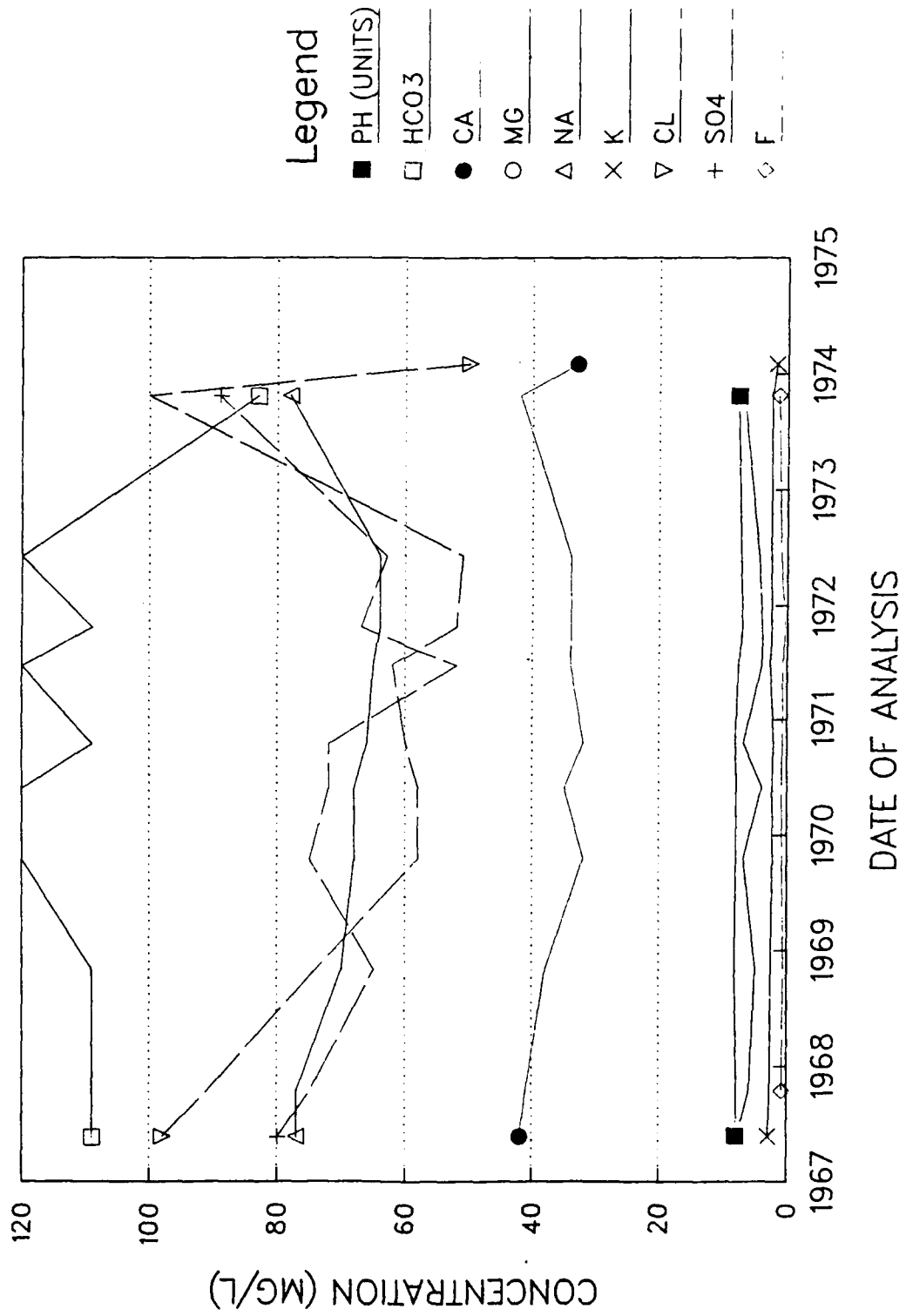
STATION NUMBER 26/39-30F01 Z



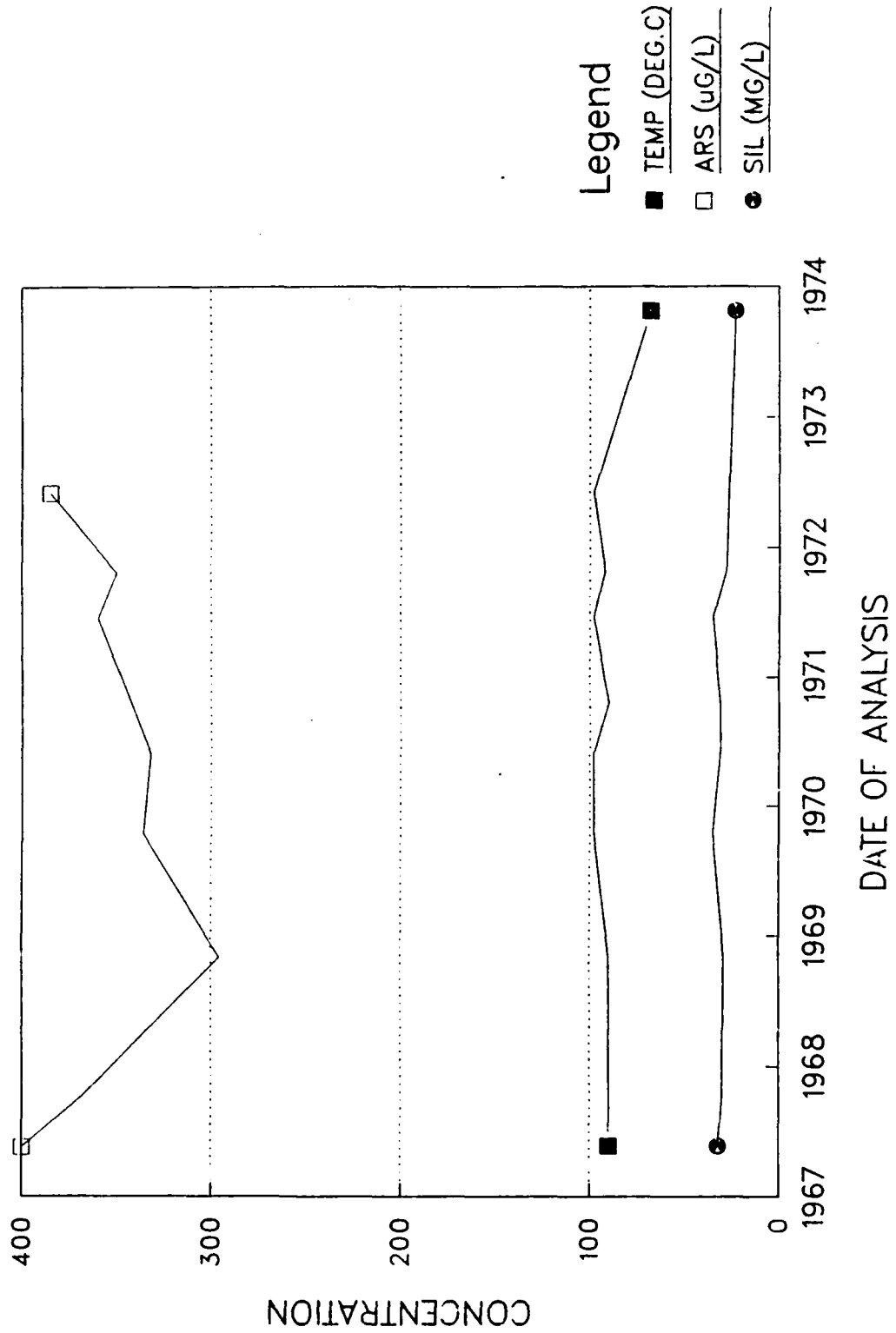
STATION NUMBER 26/39-30FO1



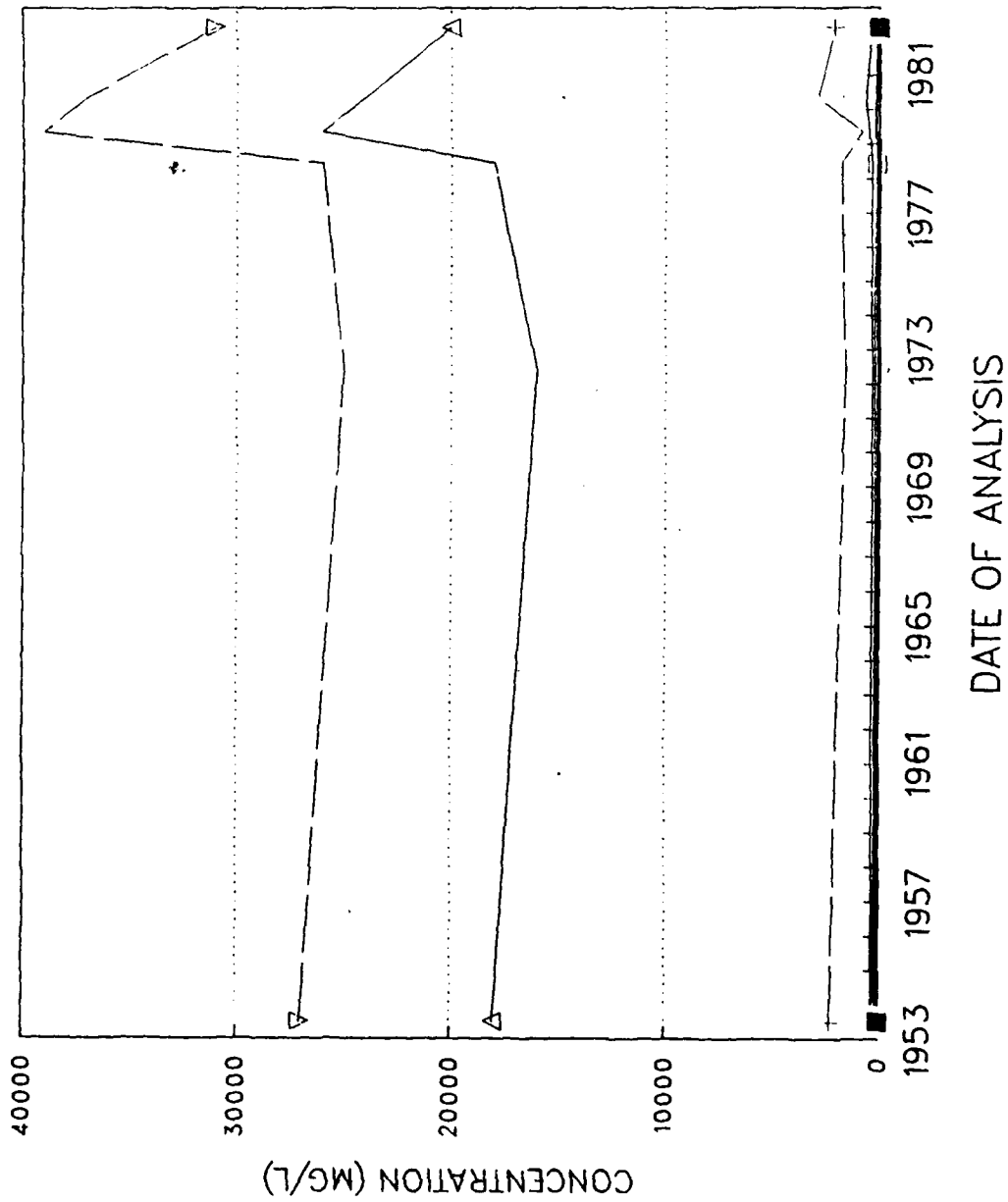
STATION NUMBER 26/39-30F03 3



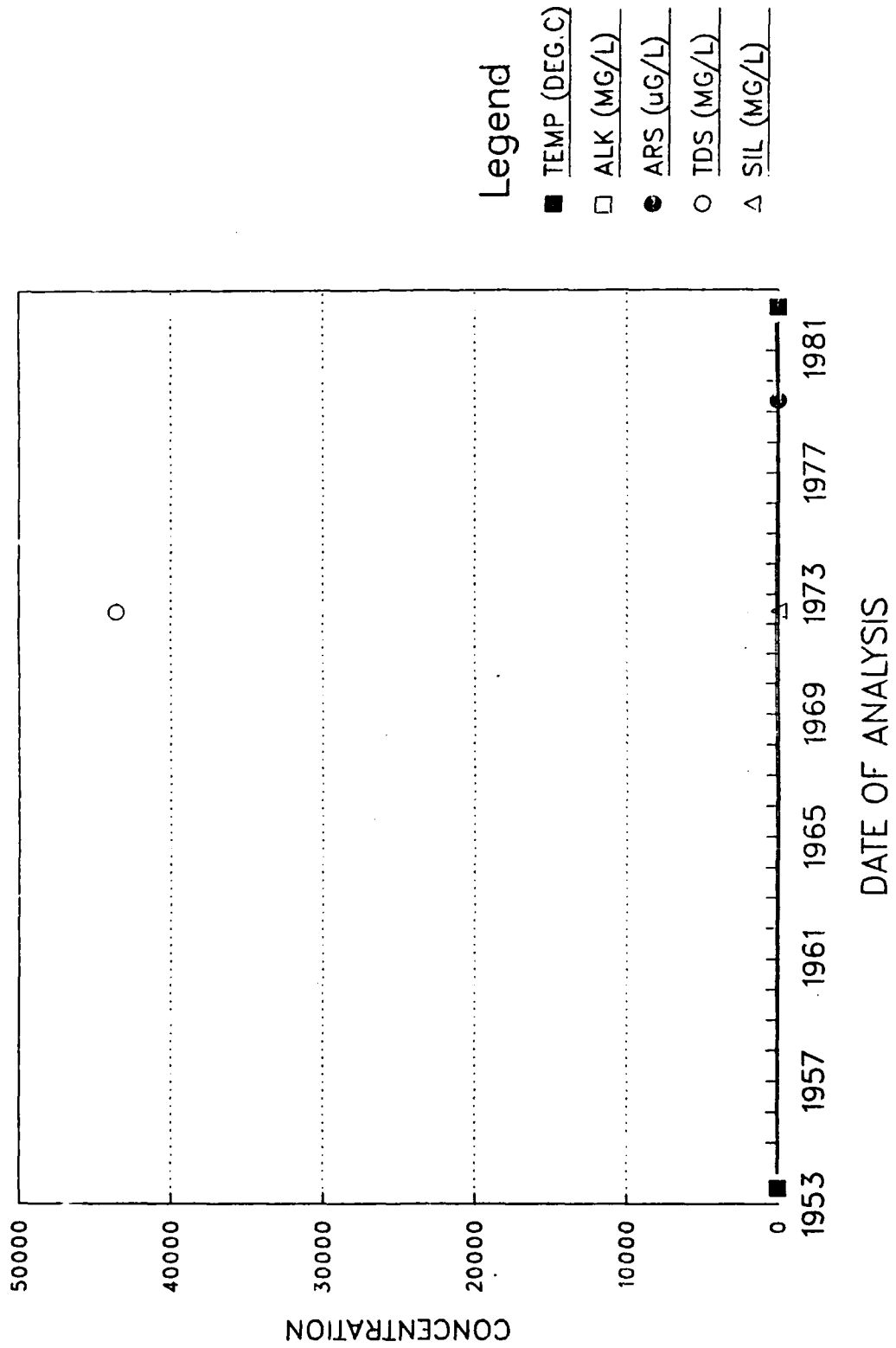
STATION NUMBER 26/39-30F03



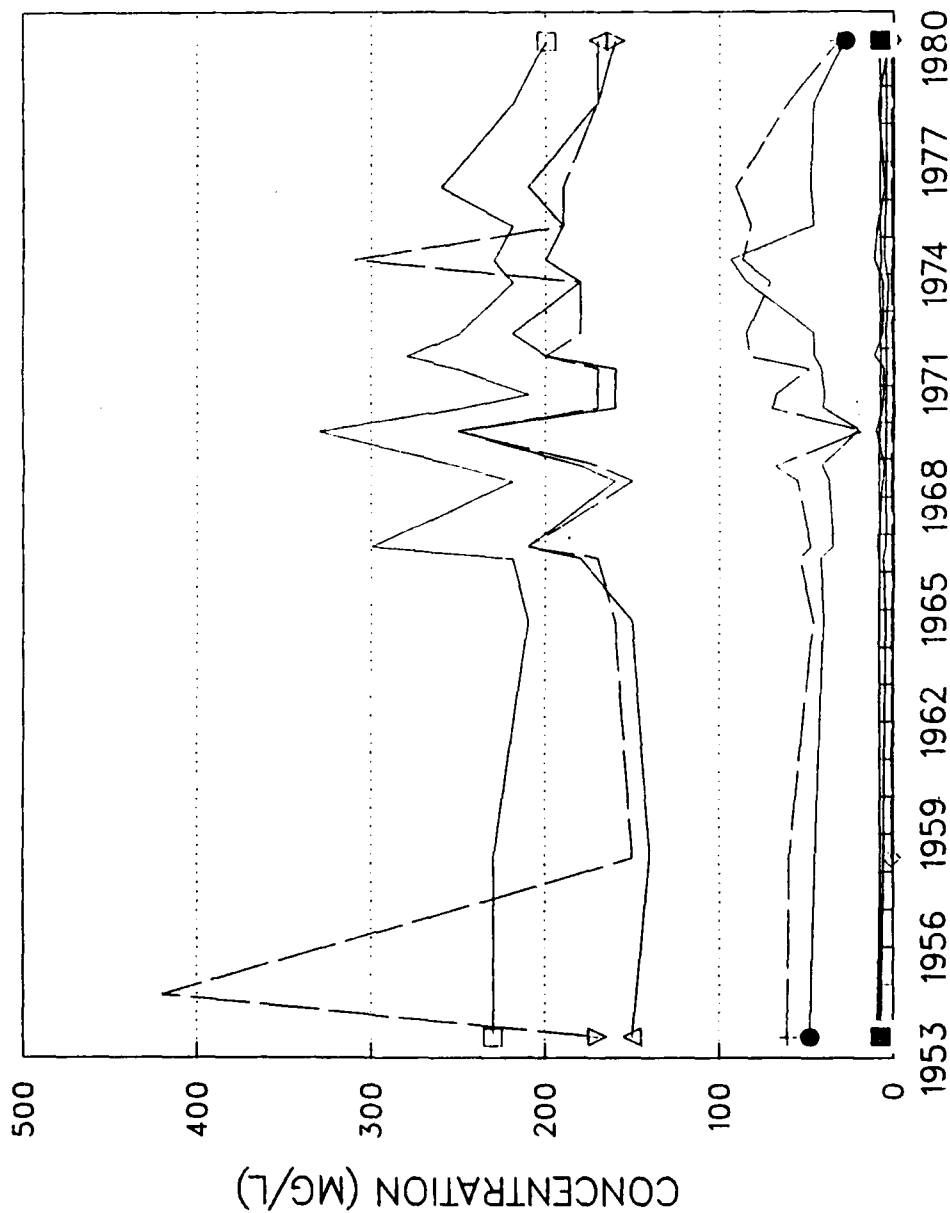
STATION NUMBER 26/40-01J01 3



STATION NUMBER 26/40-01J01



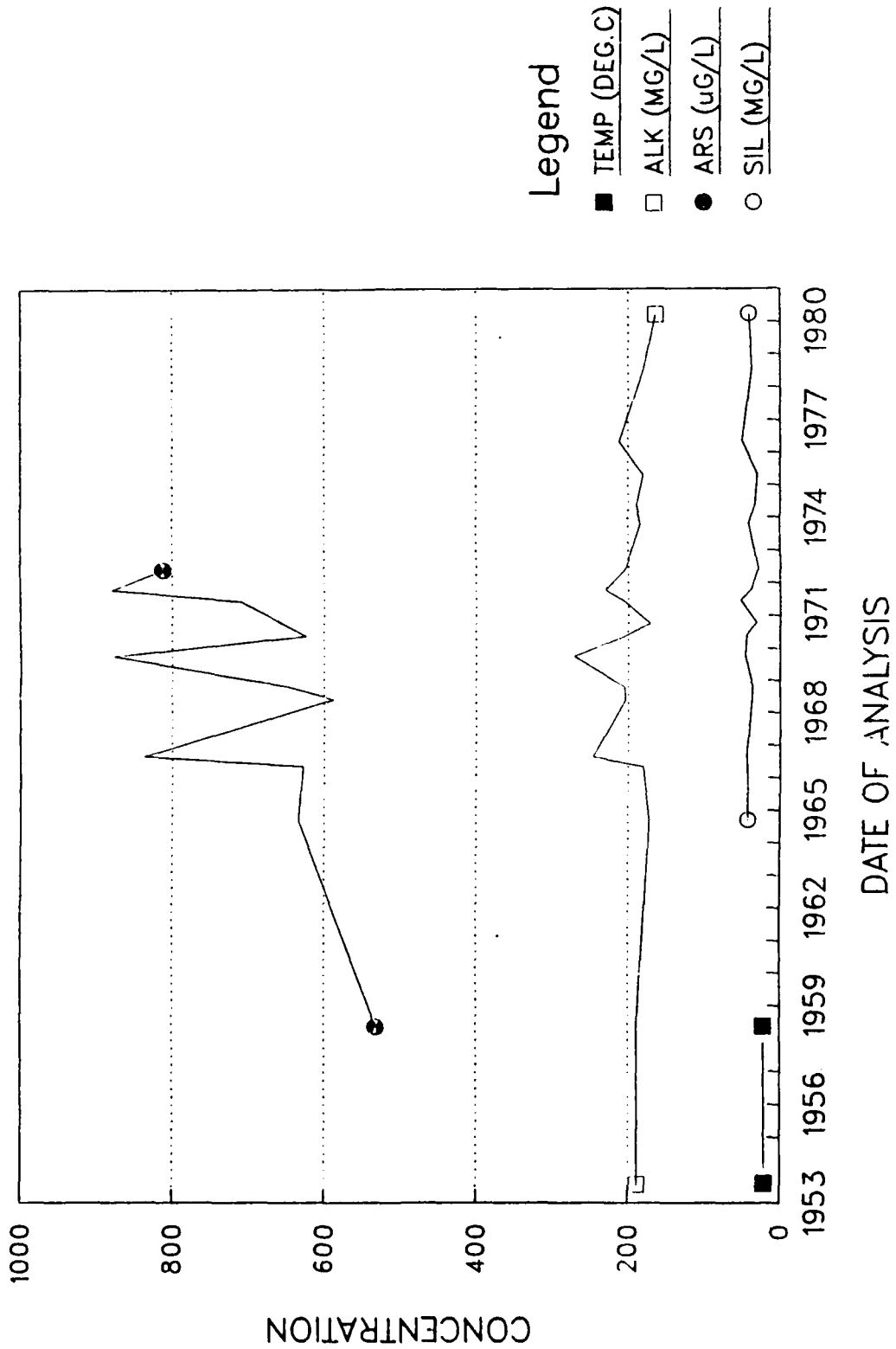
STATION NUMBER 26/40-05P01 Z



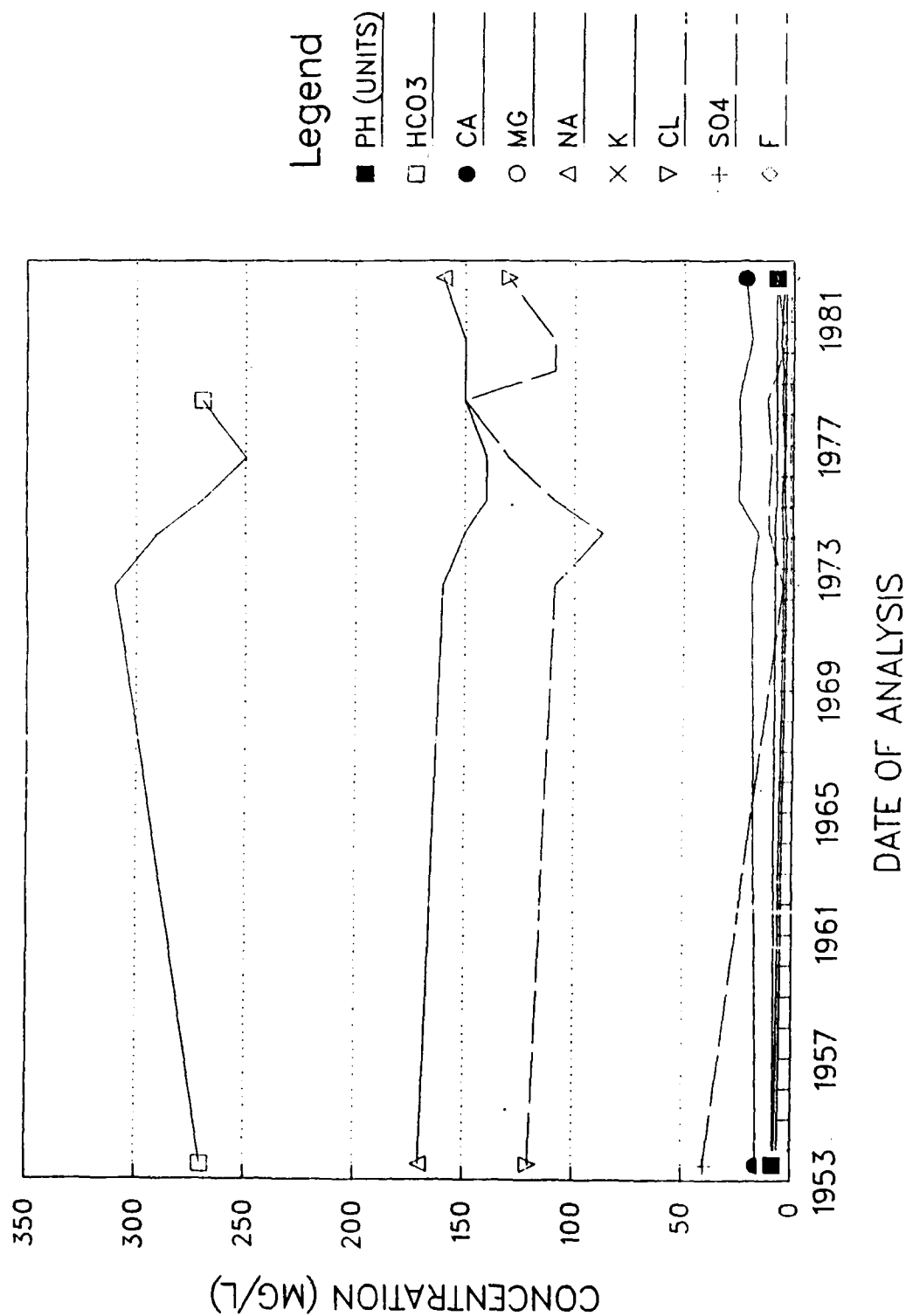
Legend

- PH (UNITS)
- HCO3
- CA
- MG
- △ NA
- × K
- ▽ CL
- + SO4
- ◇ F

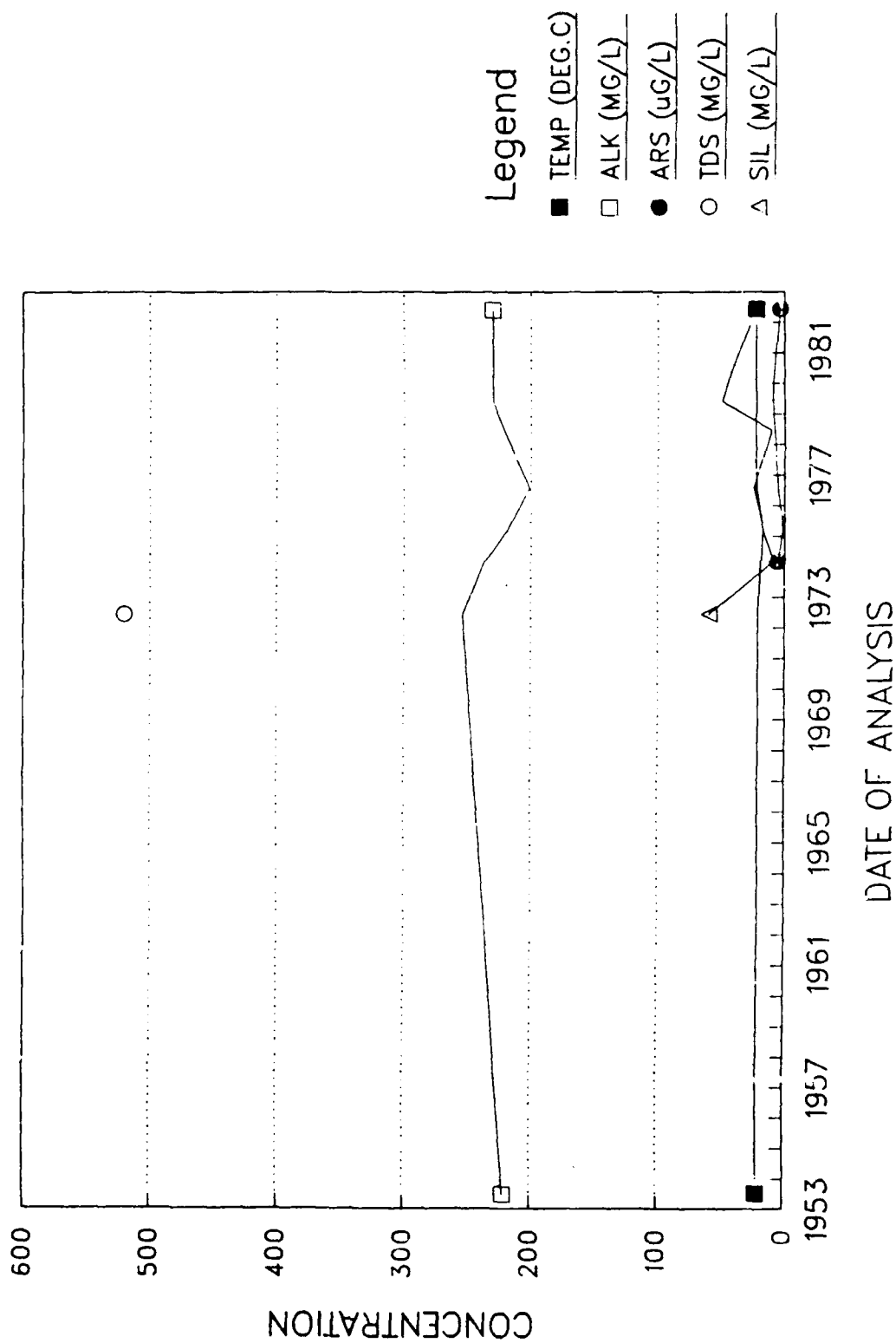
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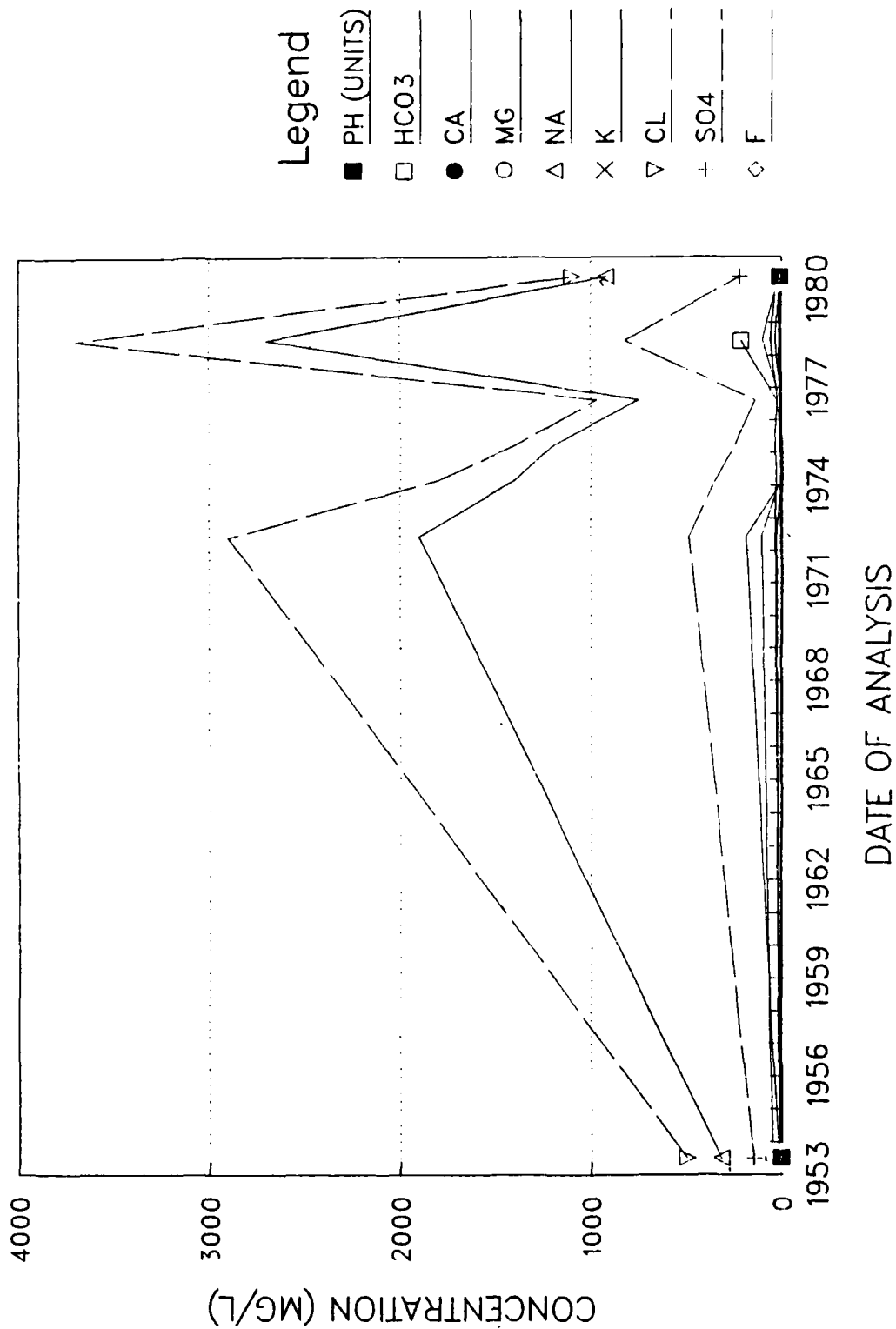
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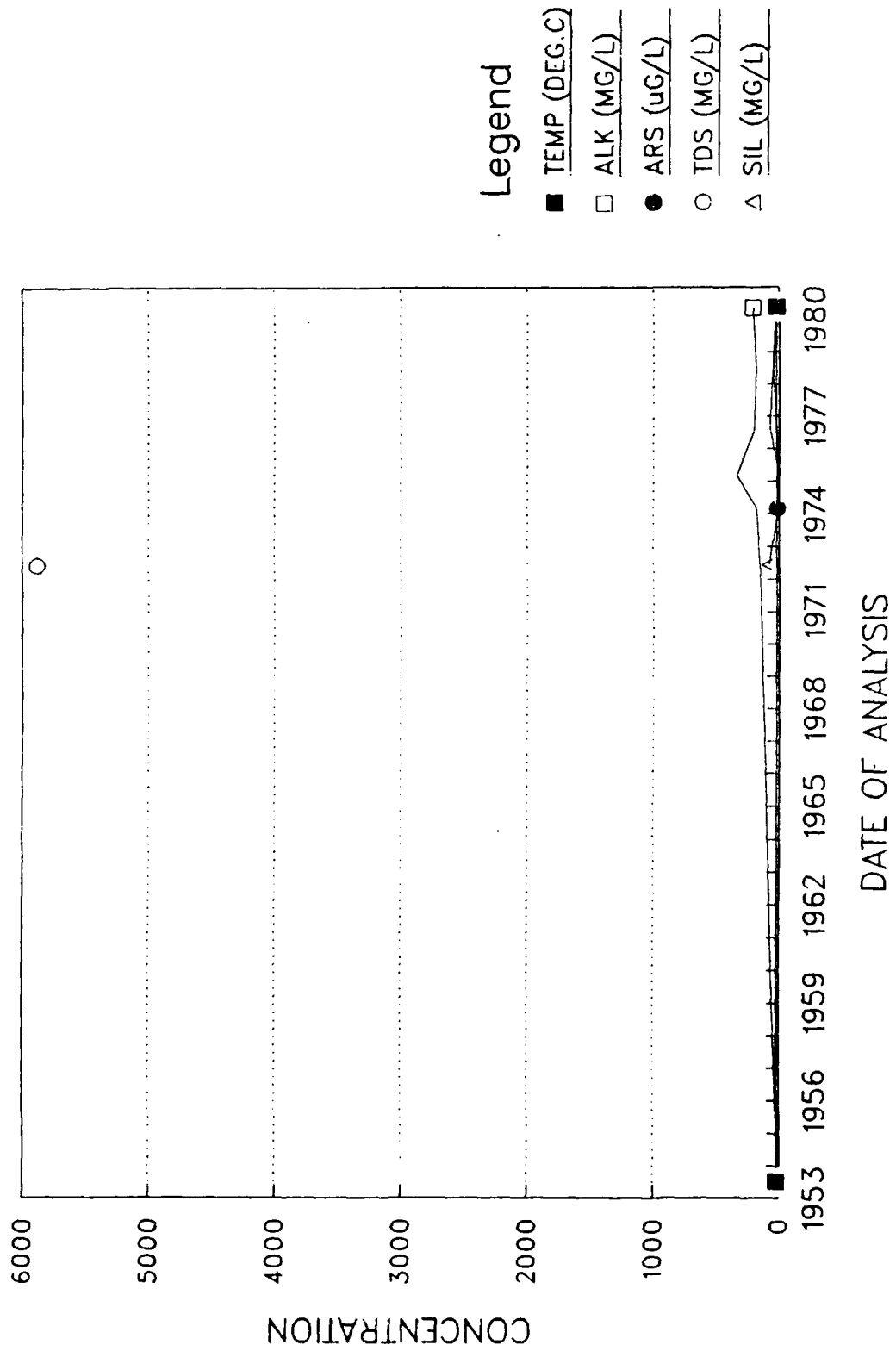
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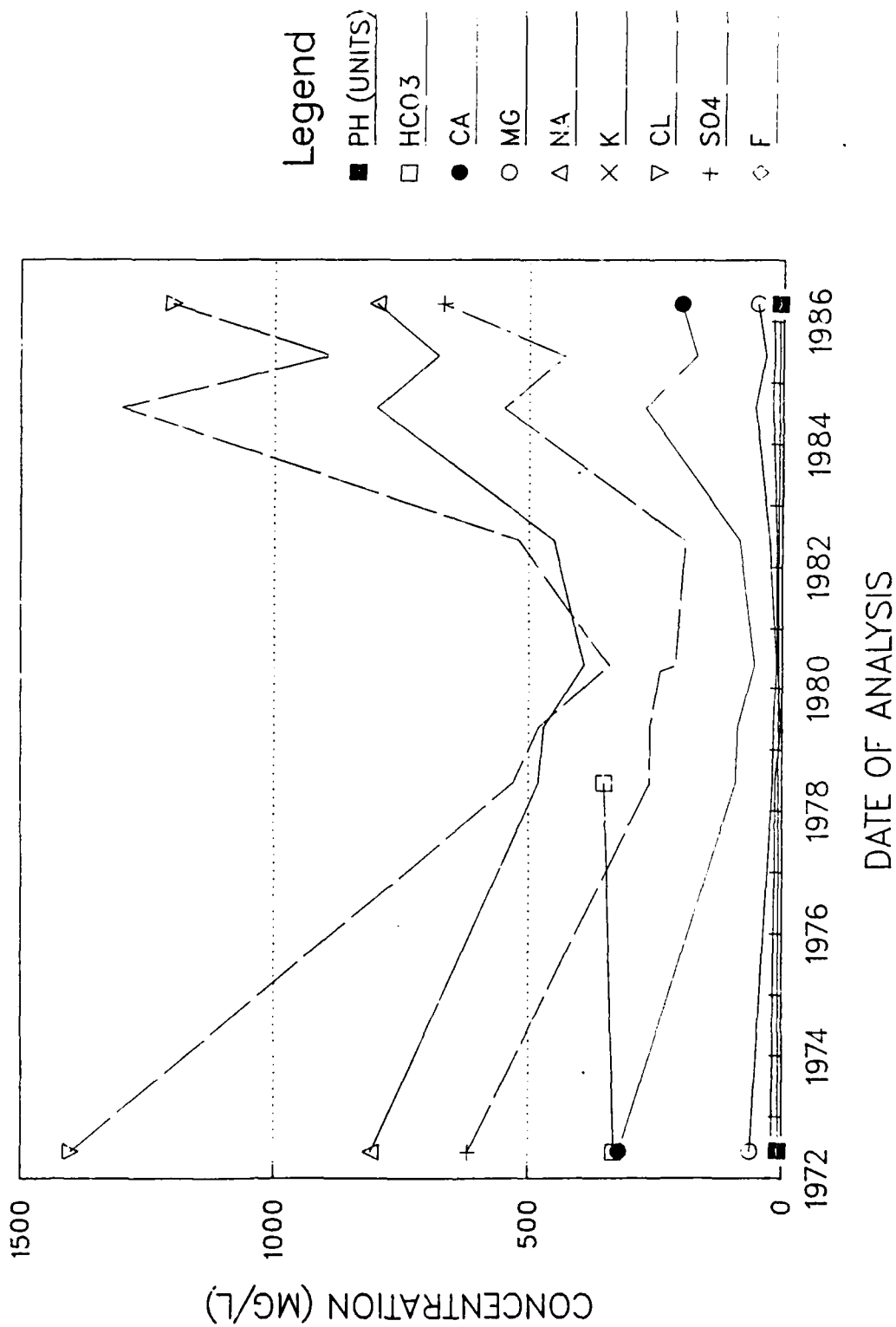
STATION NUMBER 26/40-11J01 (Y)



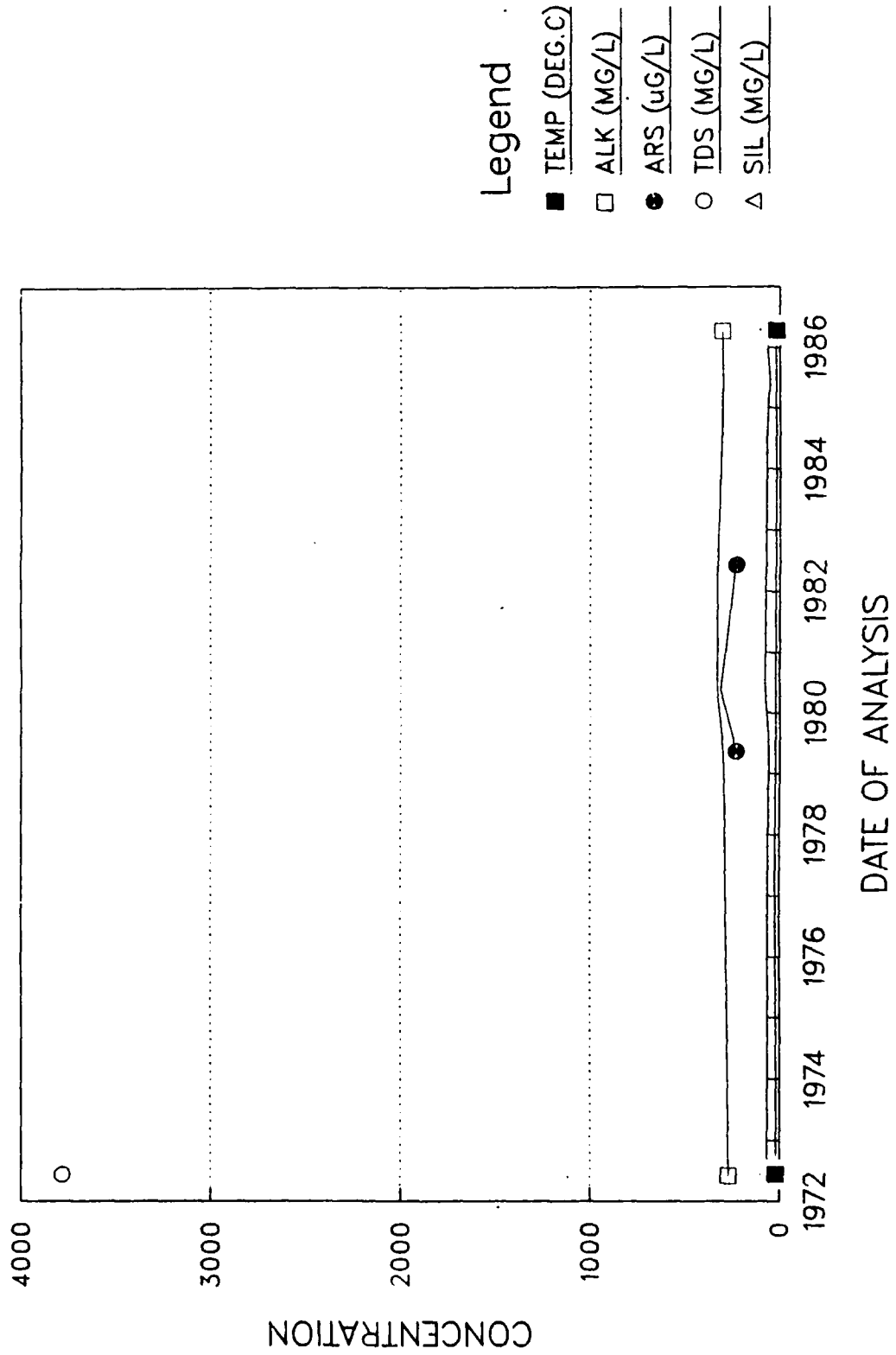
STATION NUMBER 26/40-11J01



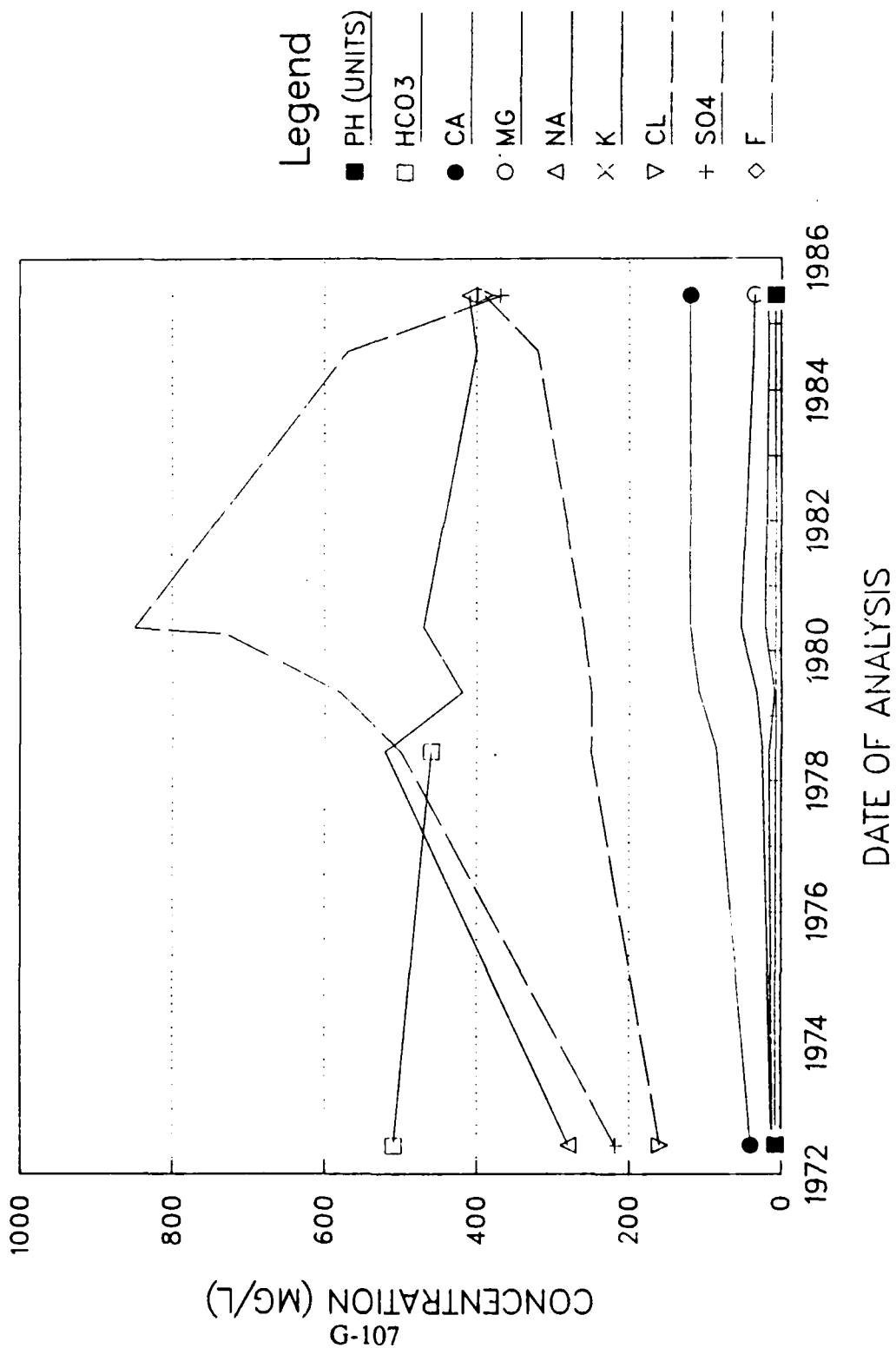
STATION NUMBER 26/40-14B01 3



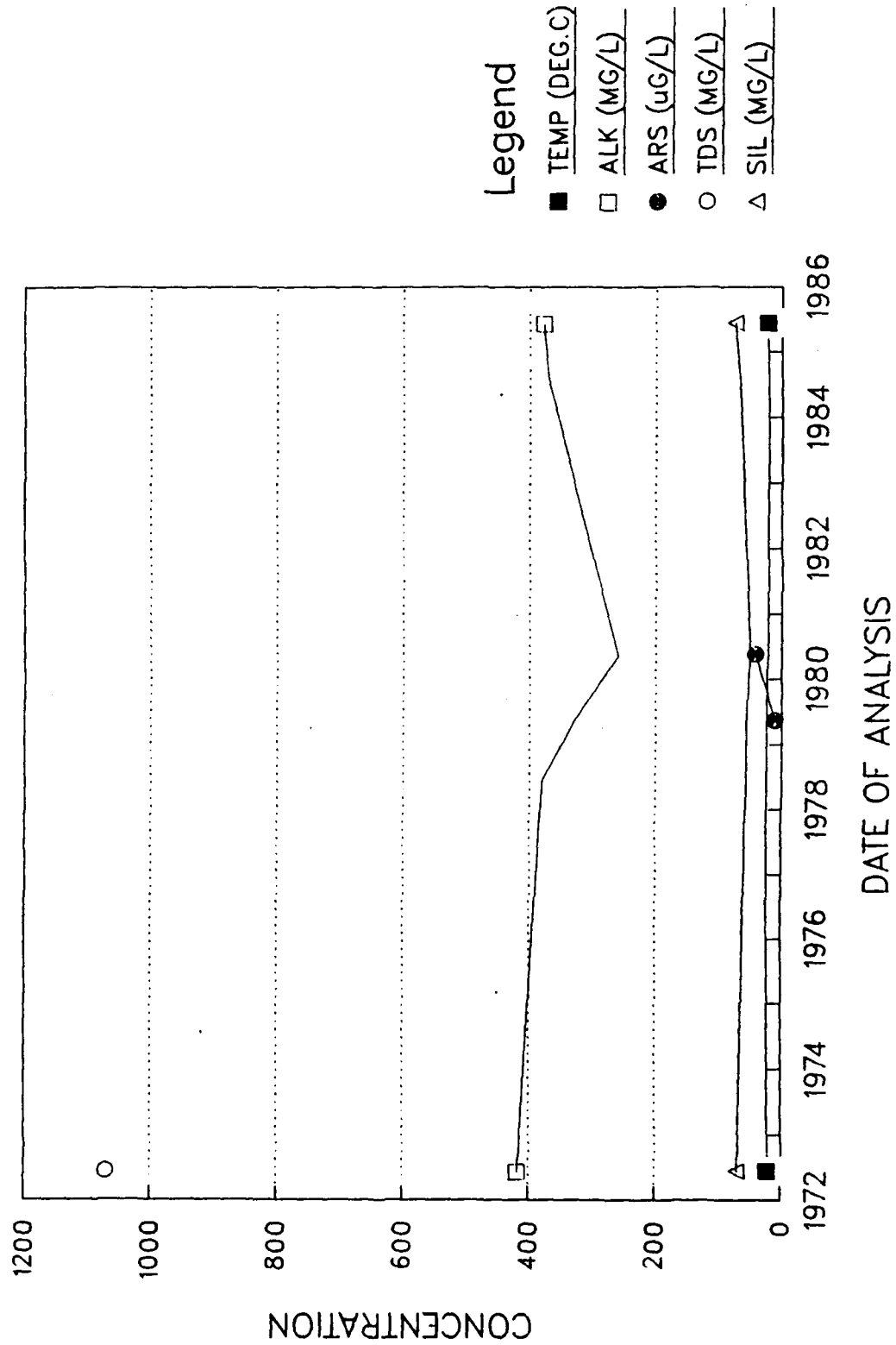
STATION NUMBER 26/40-14B01



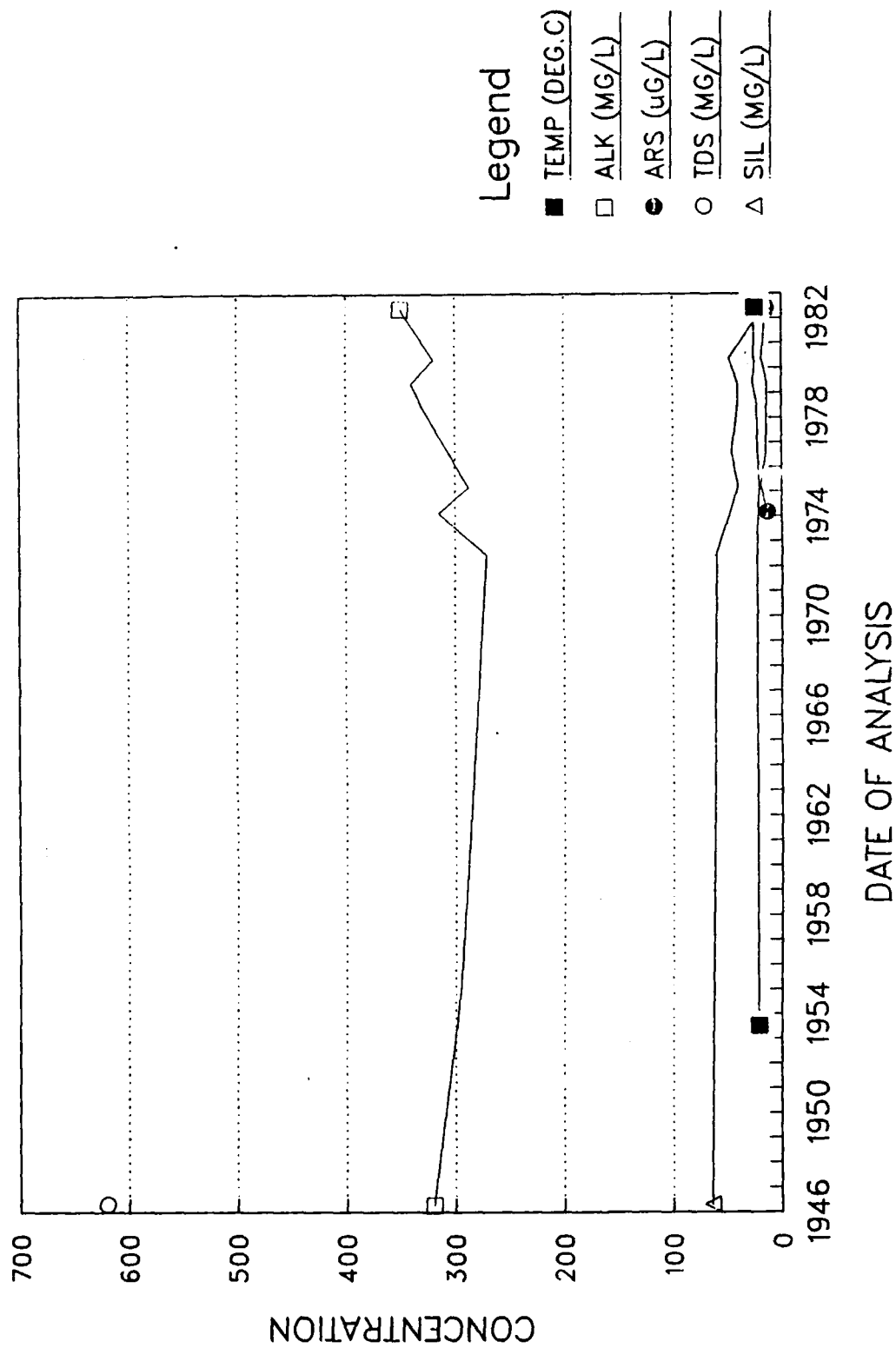
STATION NUMBER 26/40-14L01 2

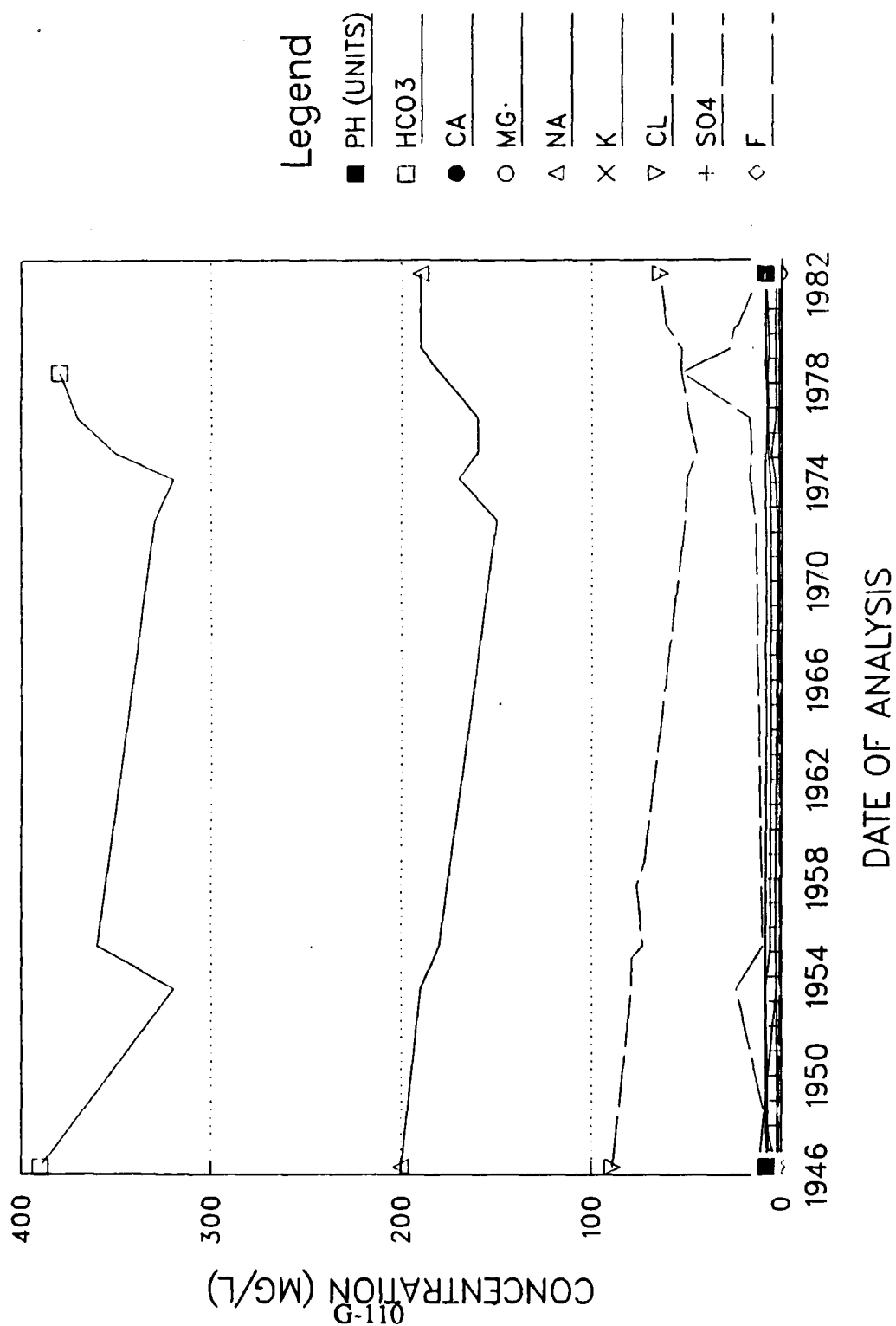


STATION NUMBER 26/40-14L01

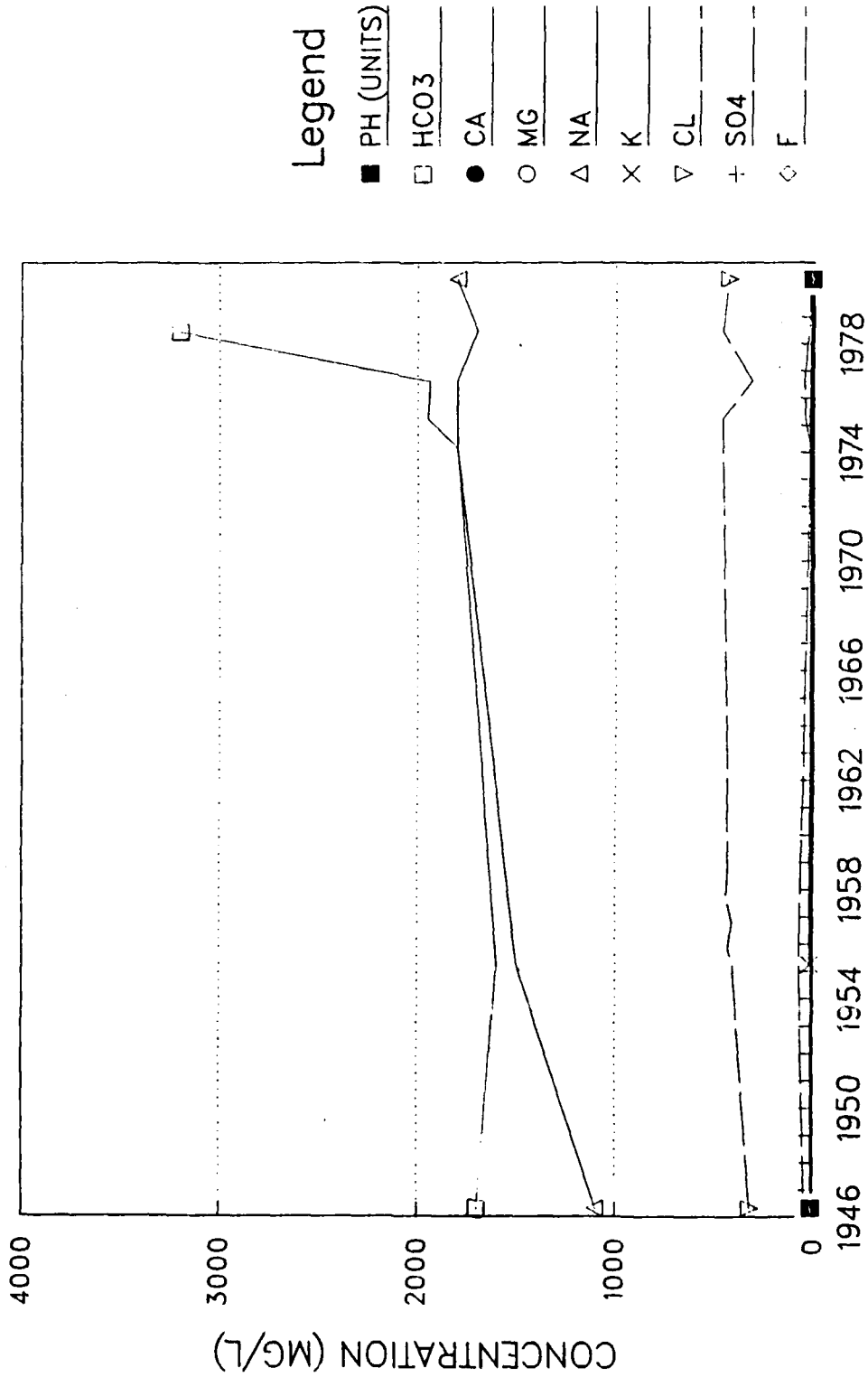


STATION NUMBER 26/40-15E01

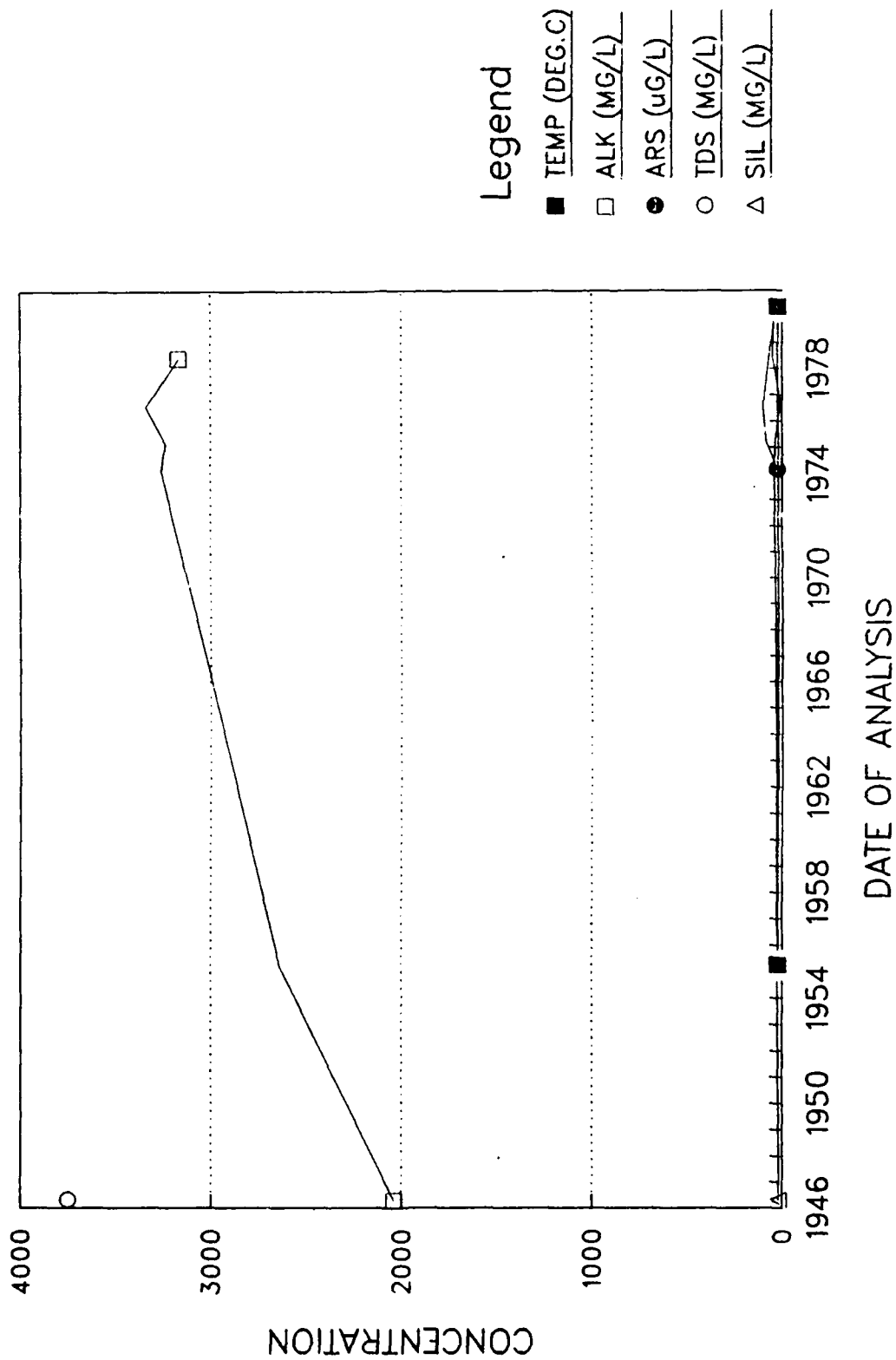




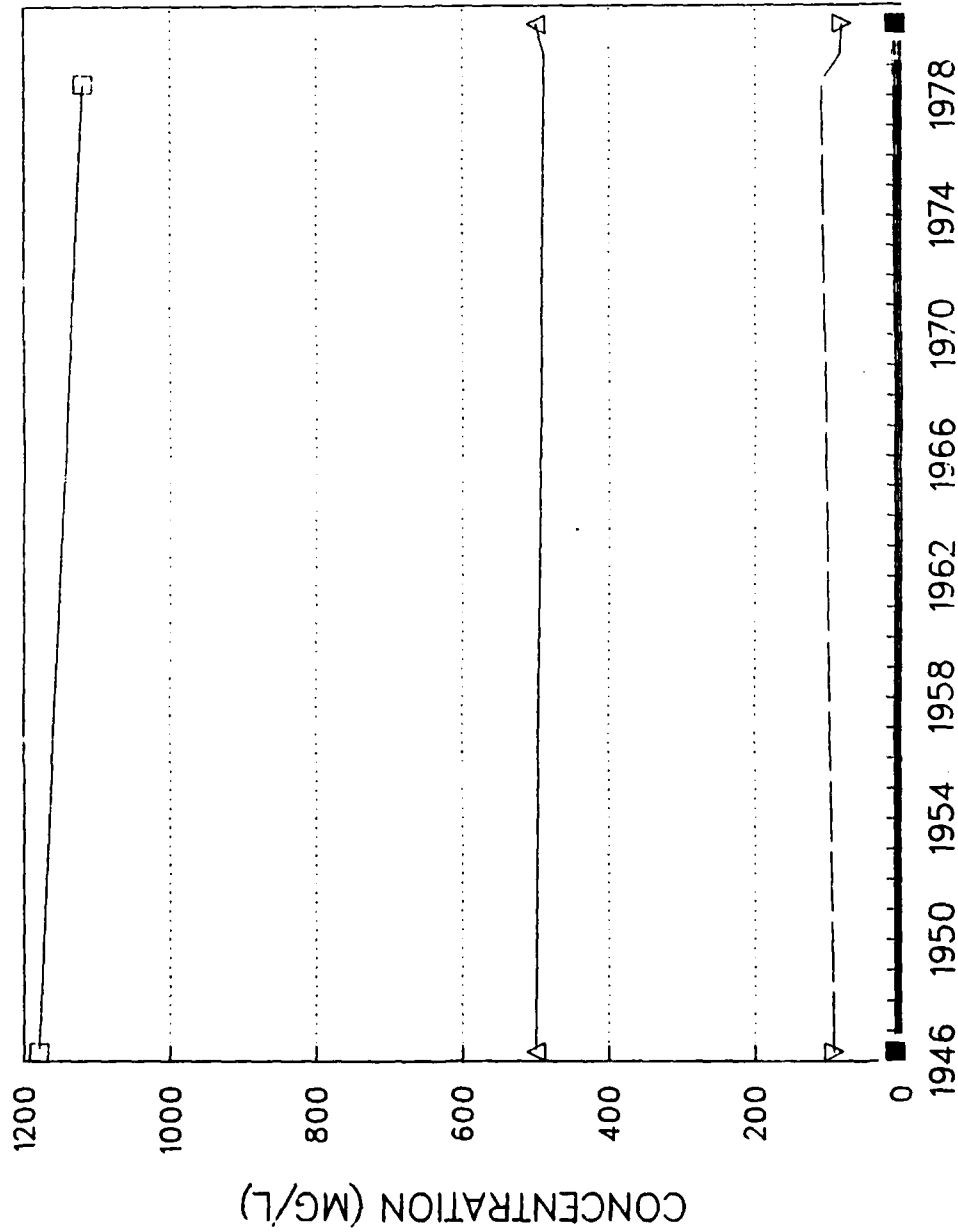
STATION NUMBER 26/40-15E02 2



STATION NUMBER 26/40-15E02



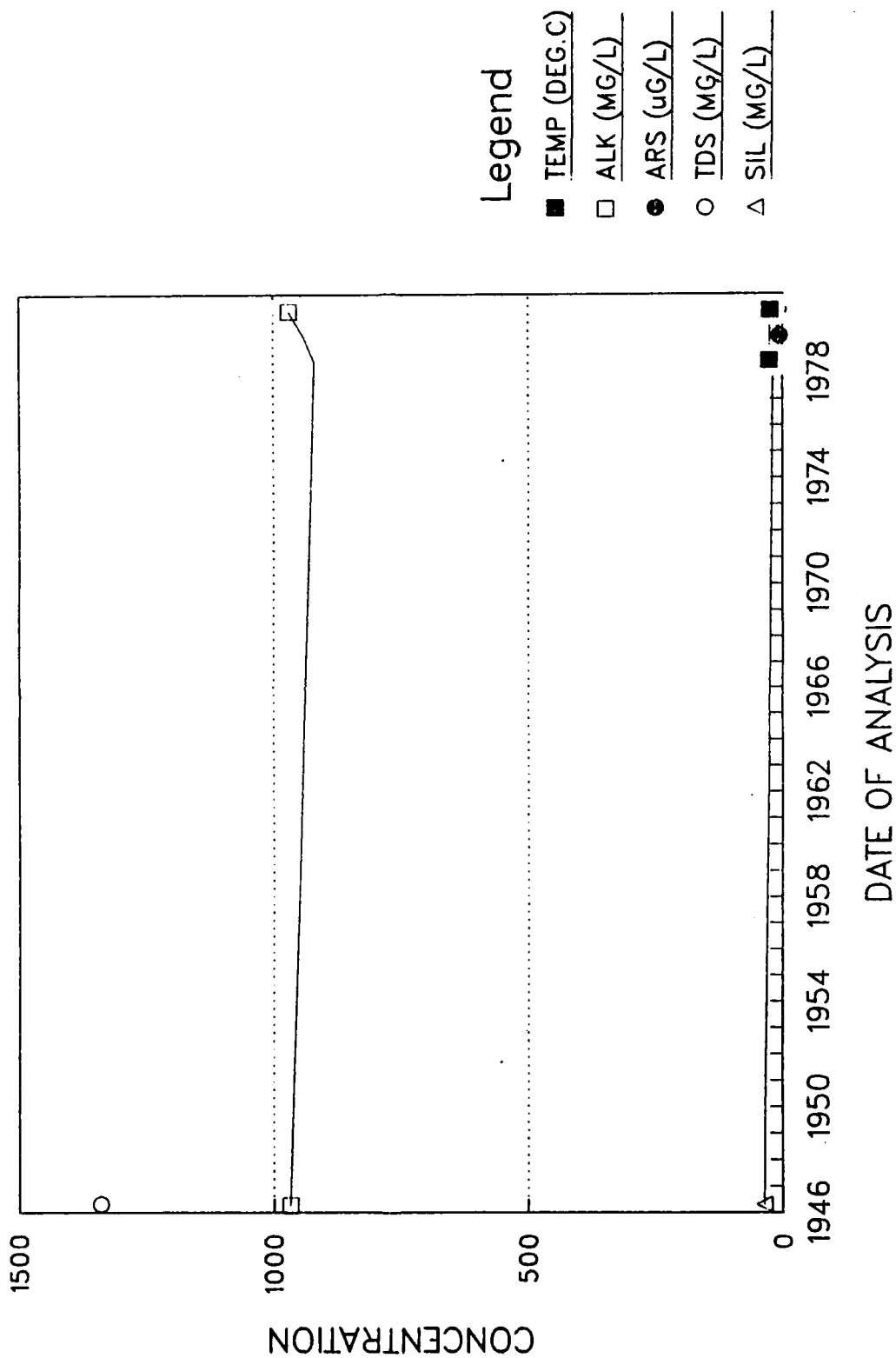
STATION NUMBER 26/40-15N01 Z



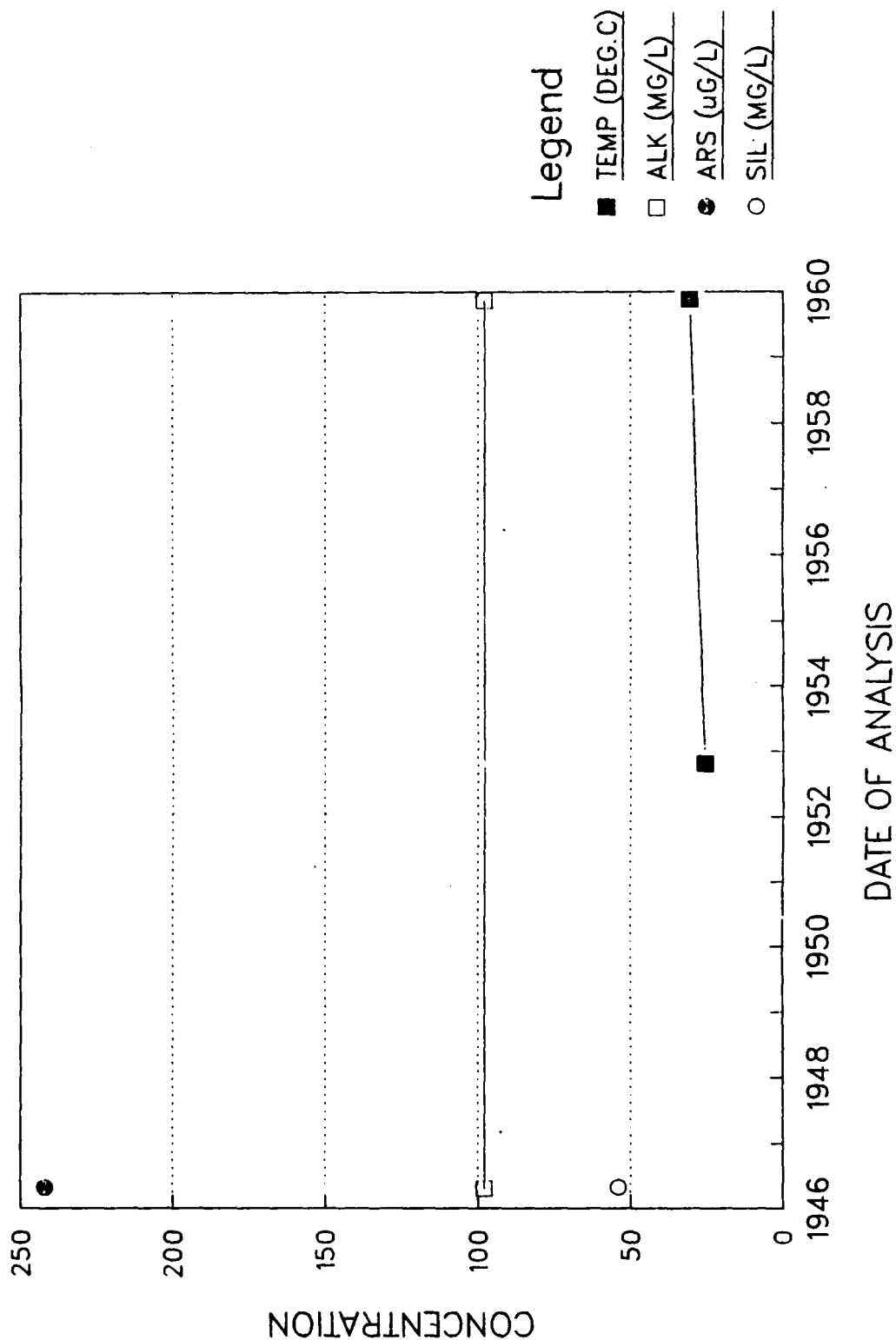
Legend

■	PH (UNITS)
□	HCO3
●	CA
○	MG
△	NA
×	K
▽	CL
+	SO4
◇	F

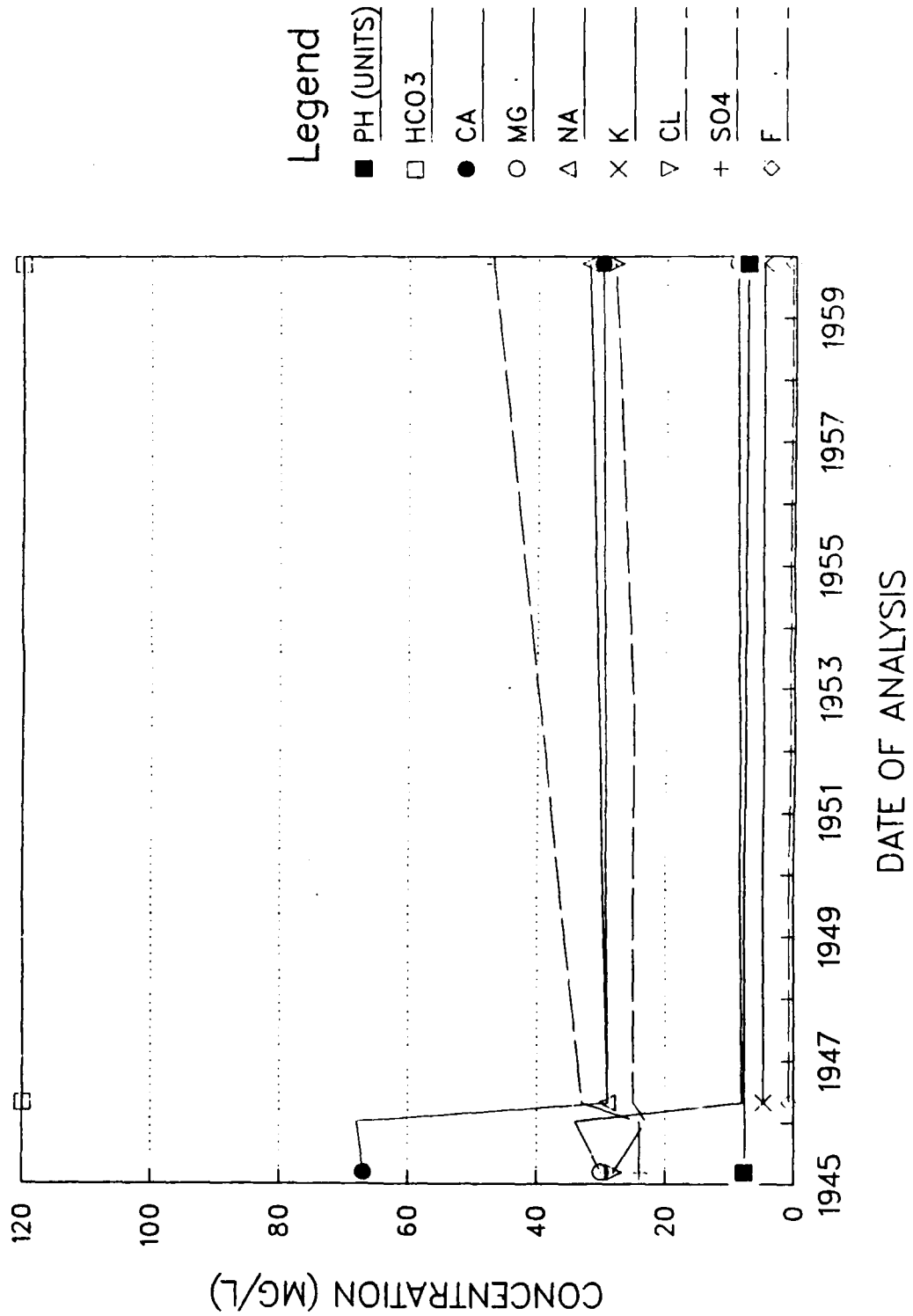
STATION NUMBER 25/40-15N01



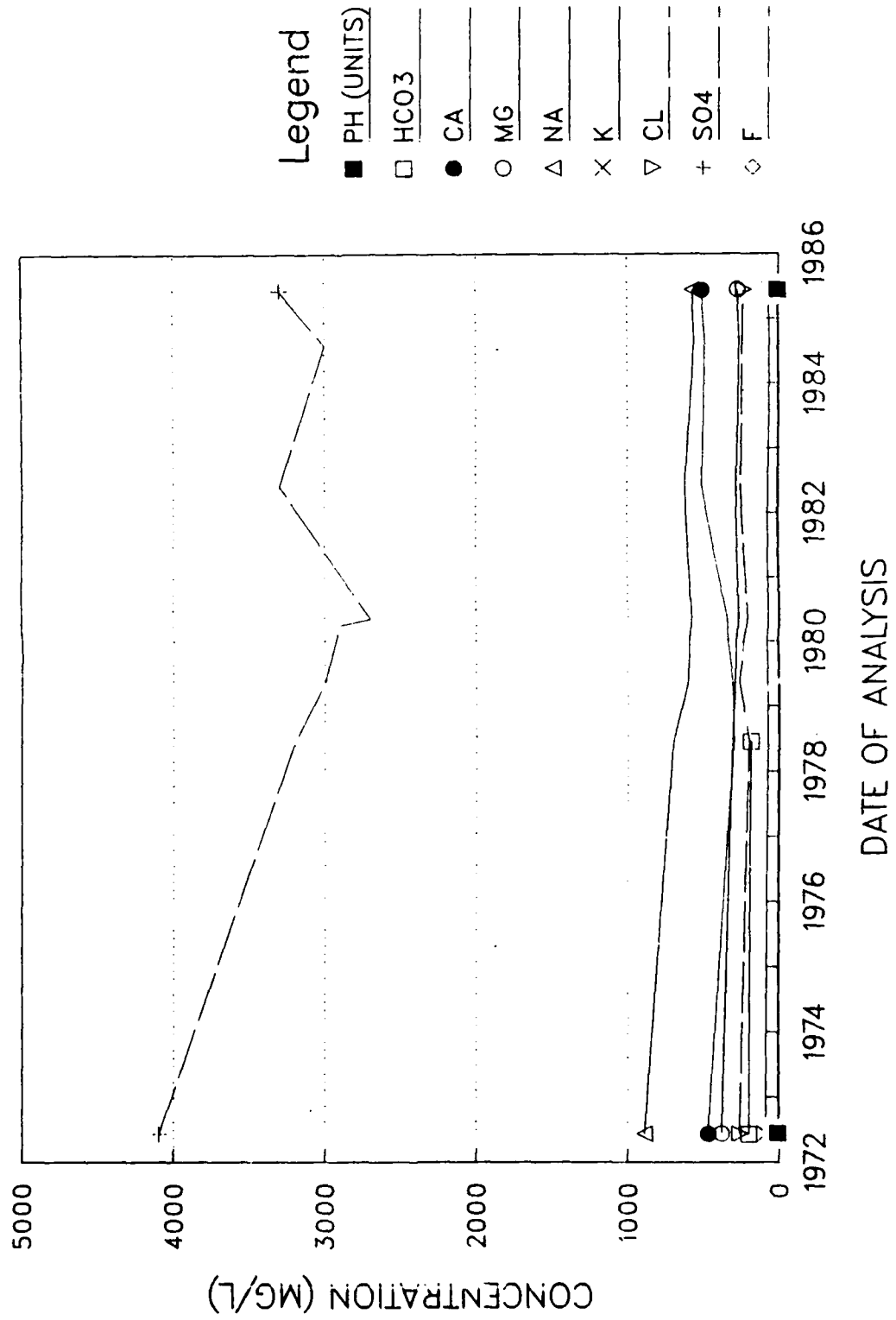
STATION NUMBER 26/40-19N01



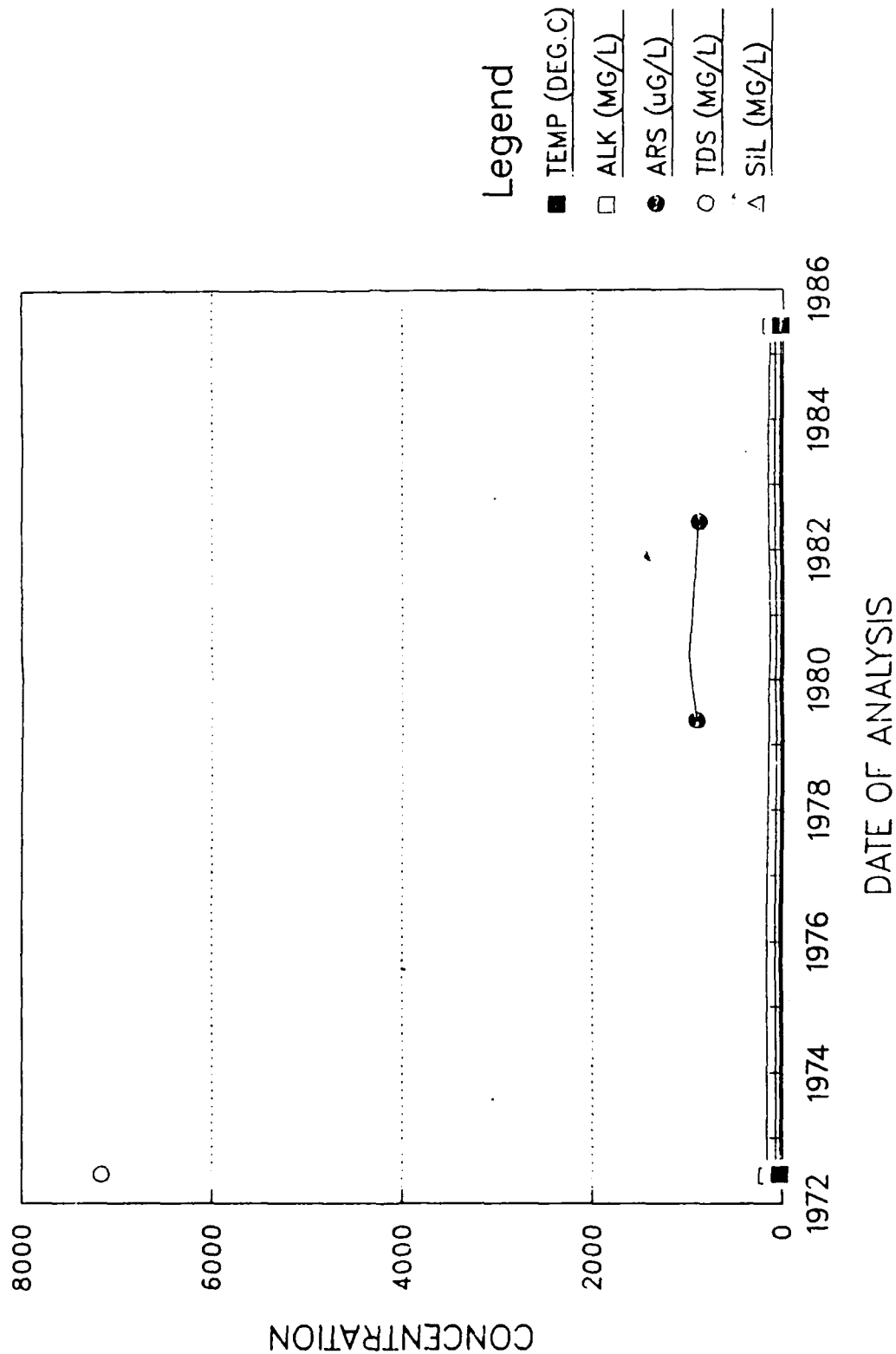
STATION NUMBER 26/40-19N01



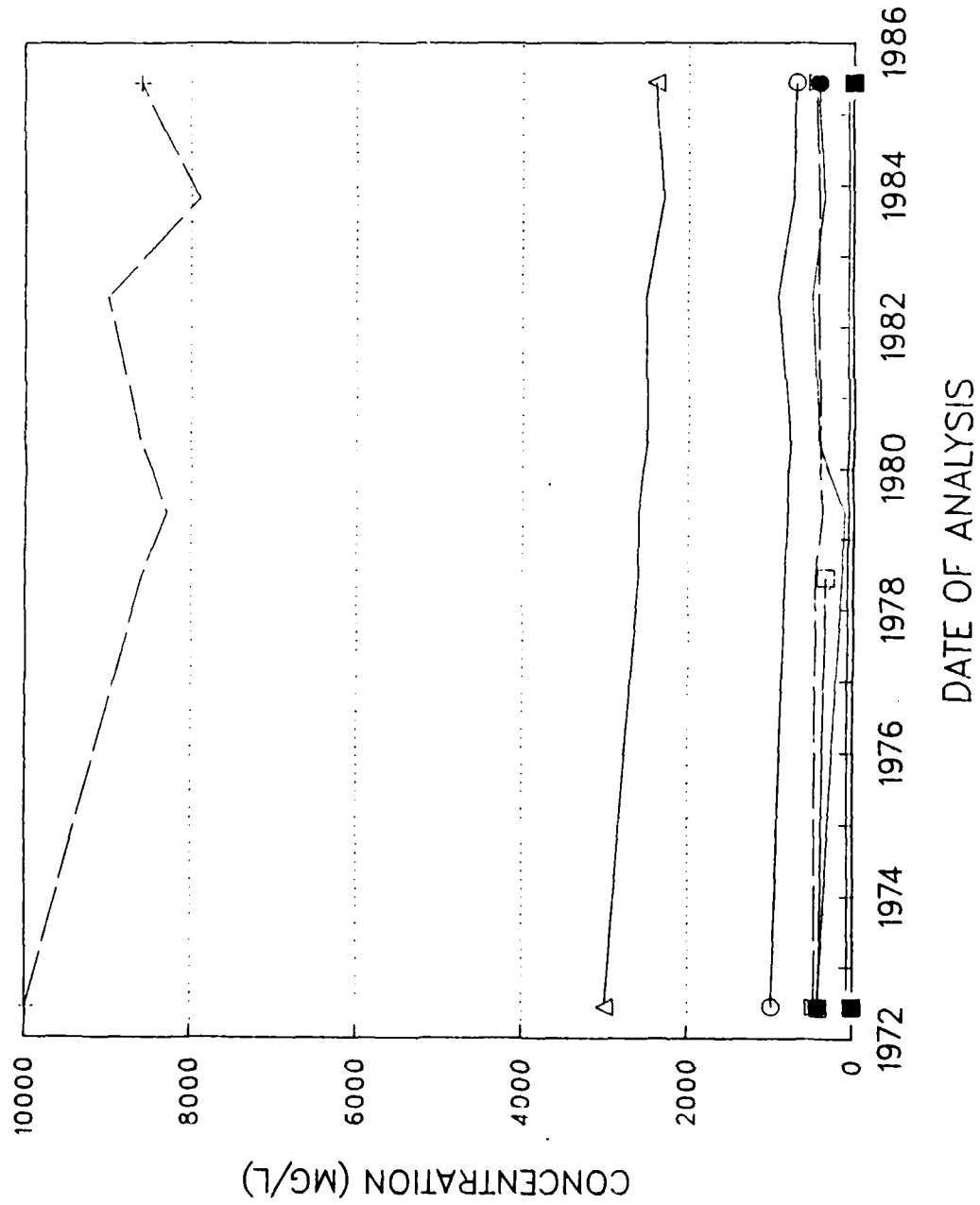
STATION NUMBER 26/40-22H01 (1)



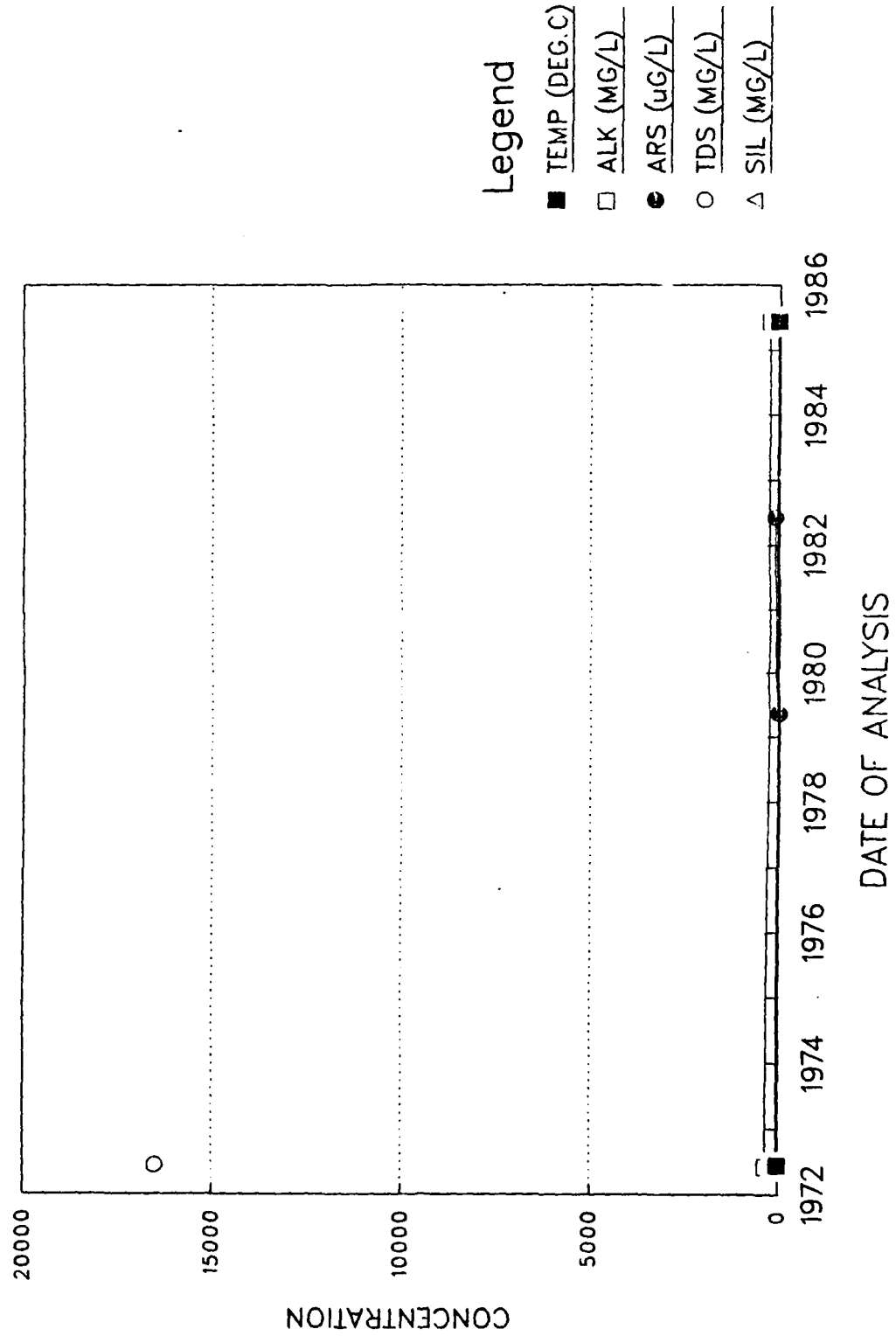
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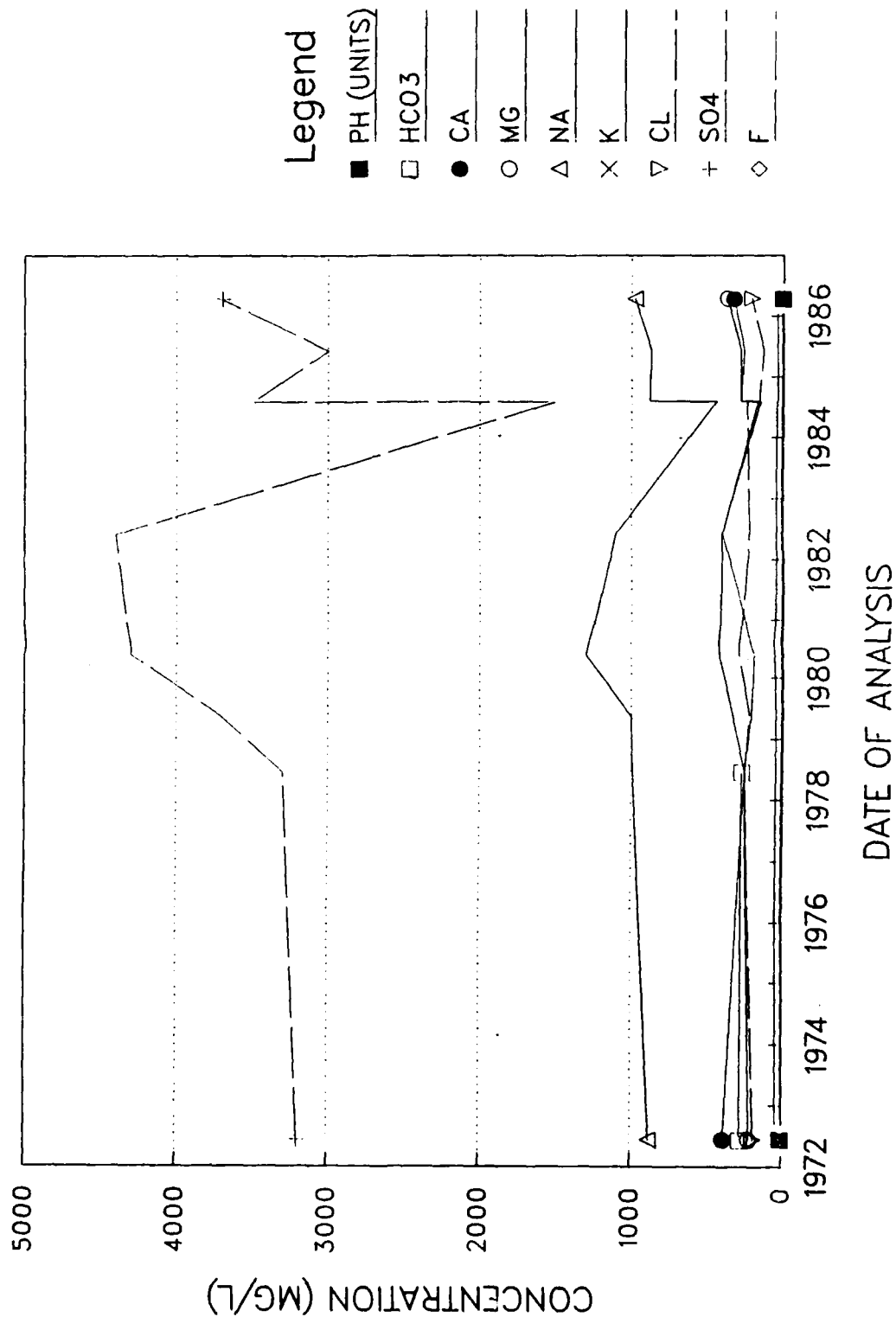
STATION NUMBER 26/40-22H02 (1)



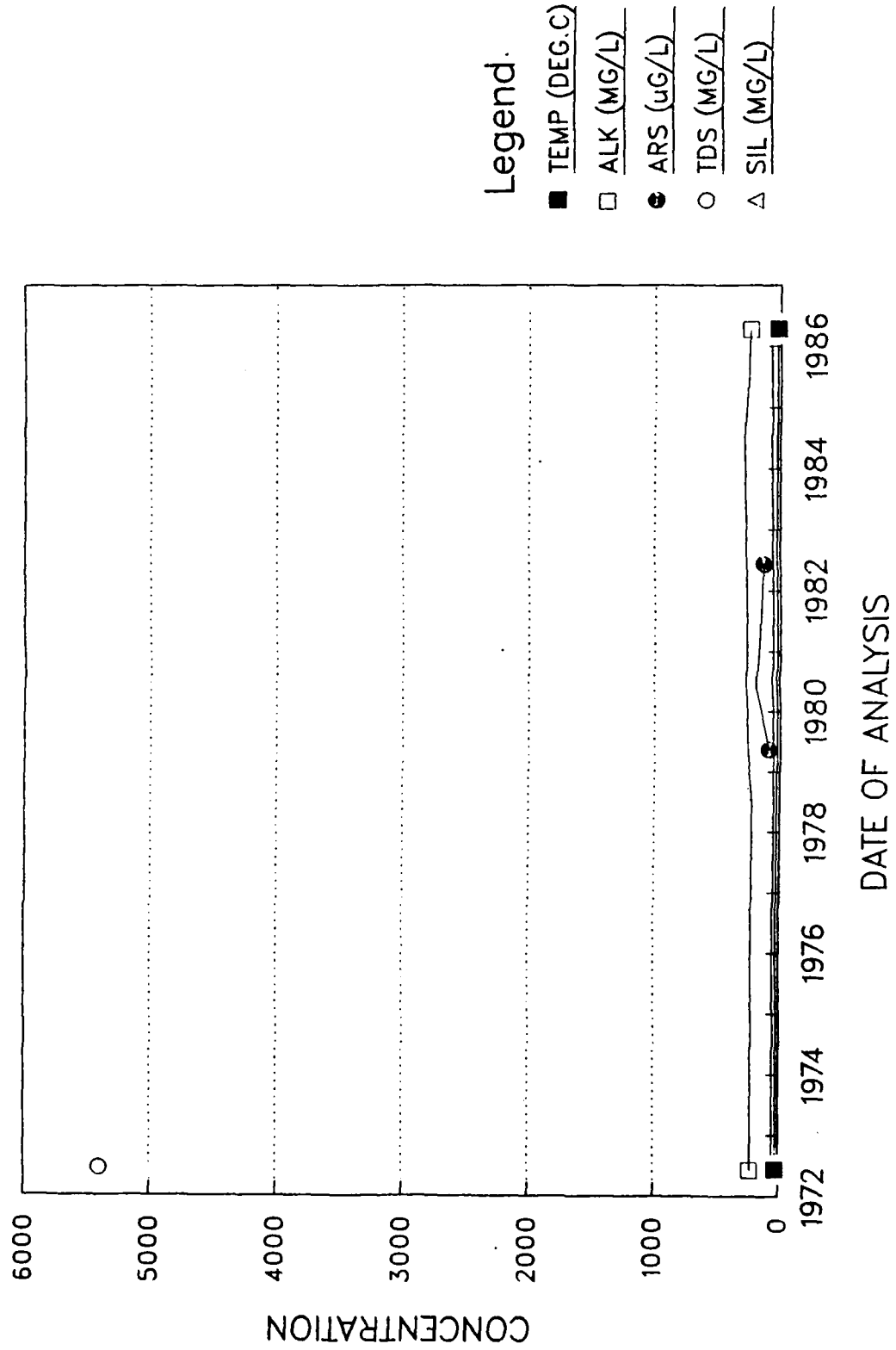
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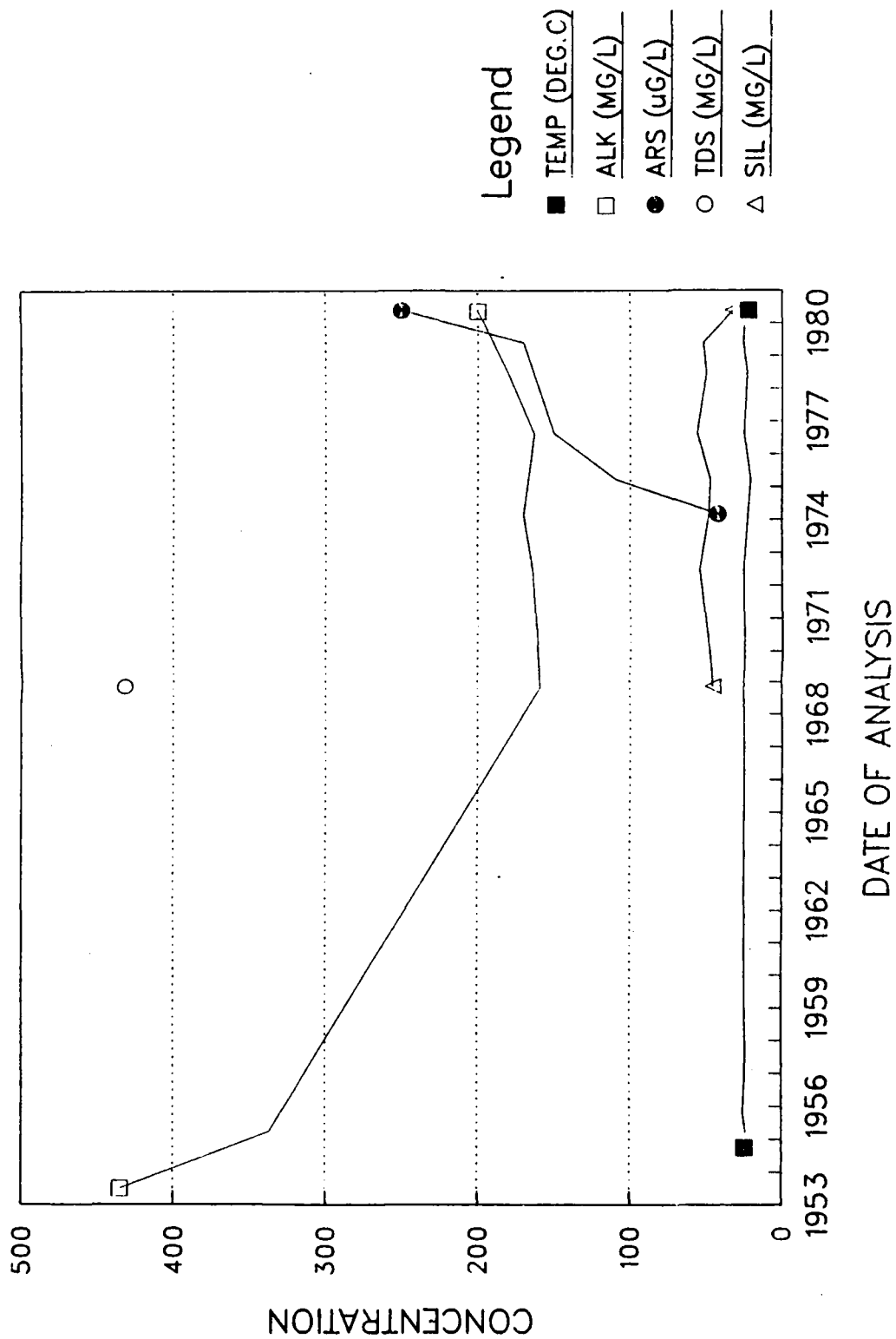
STATION NUMBER 26/40-22H03 3



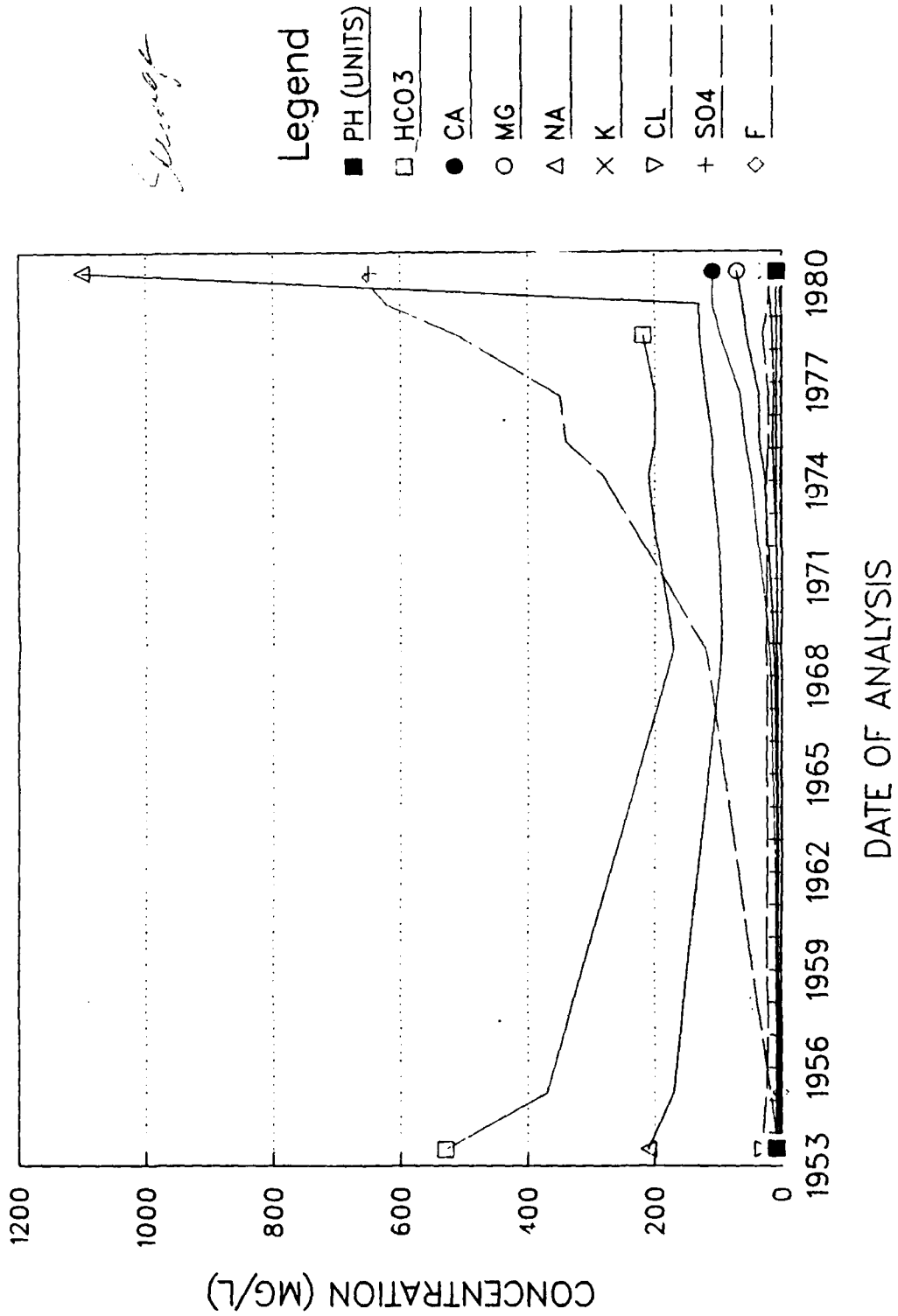
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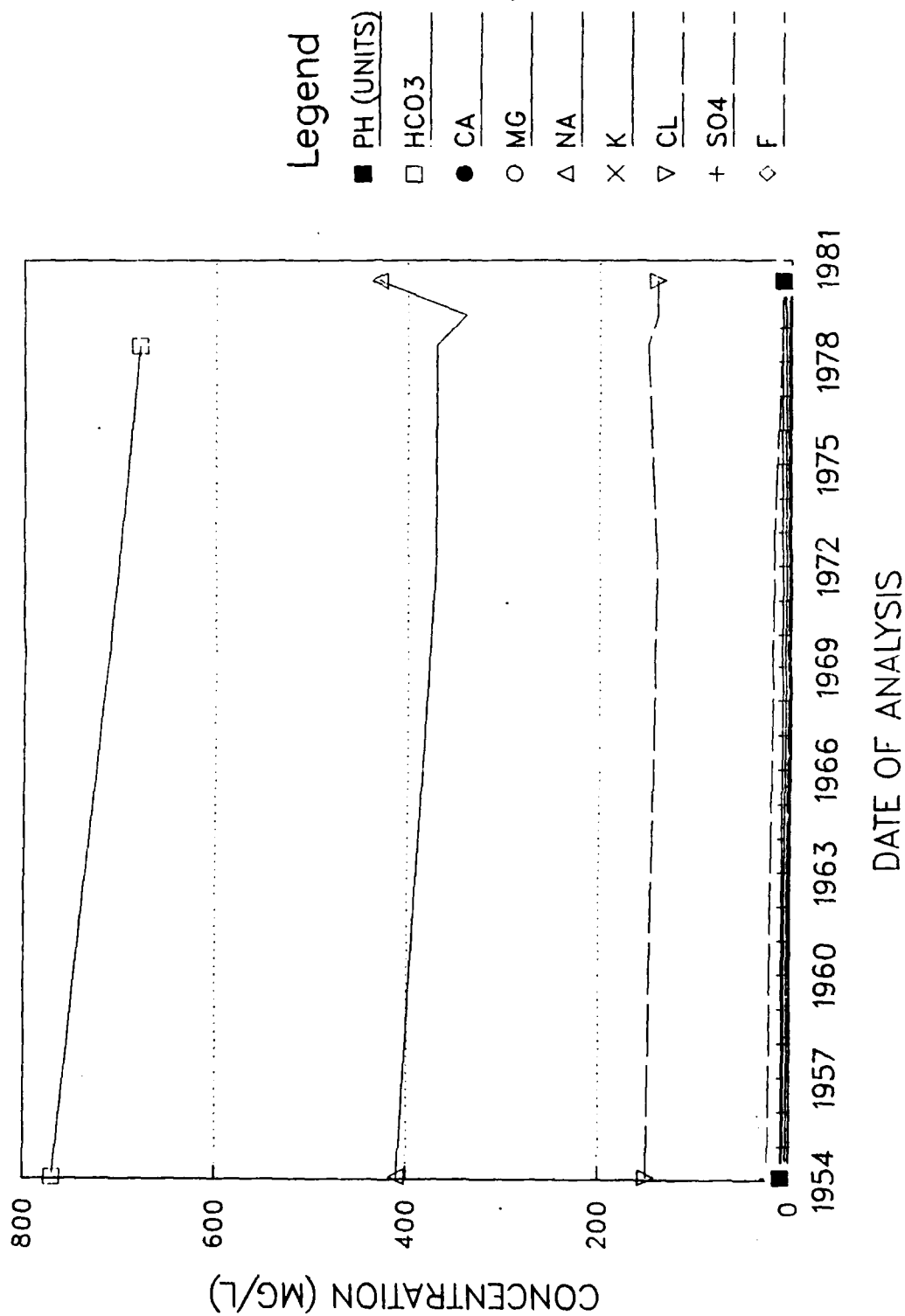
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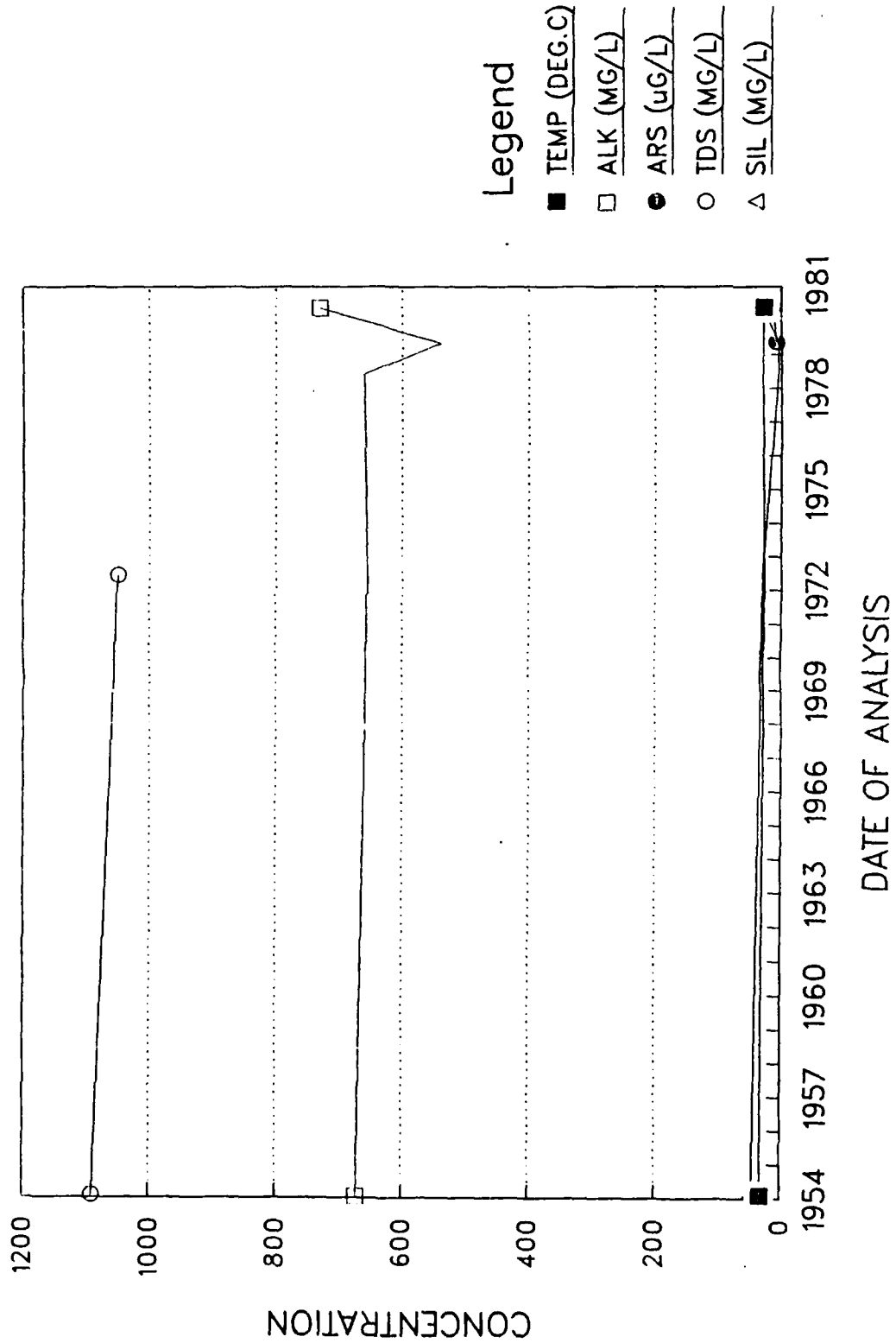
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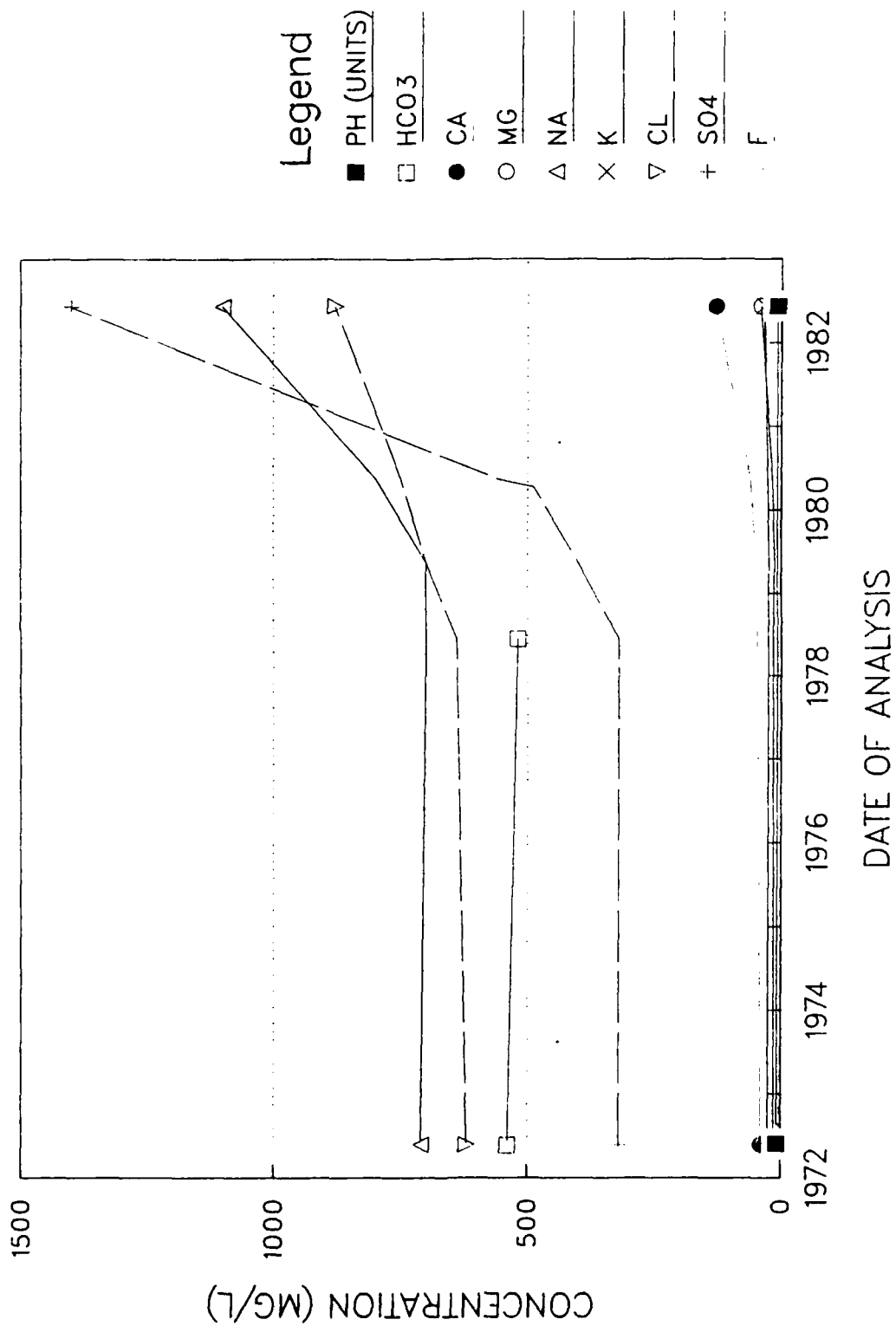
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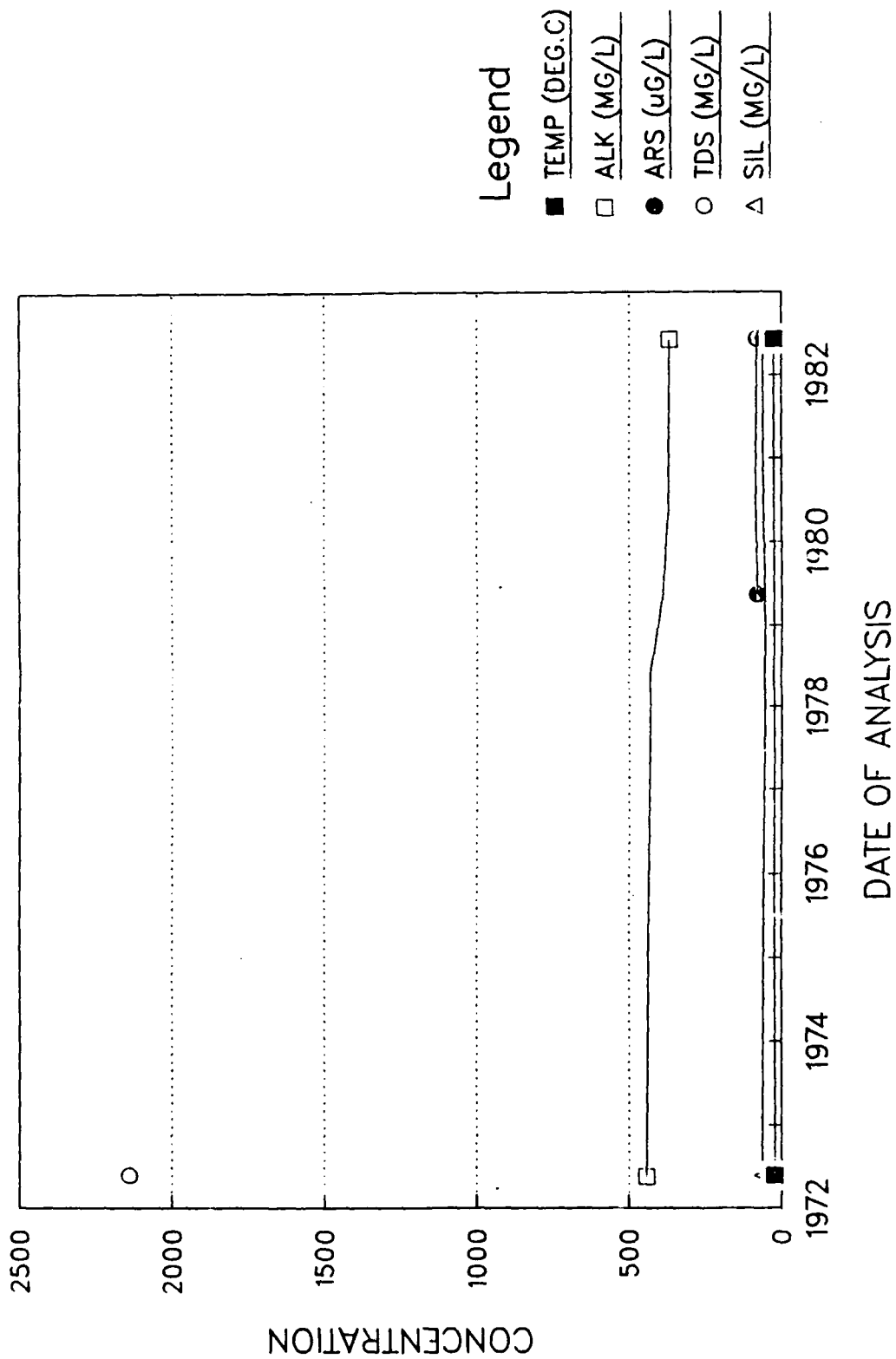
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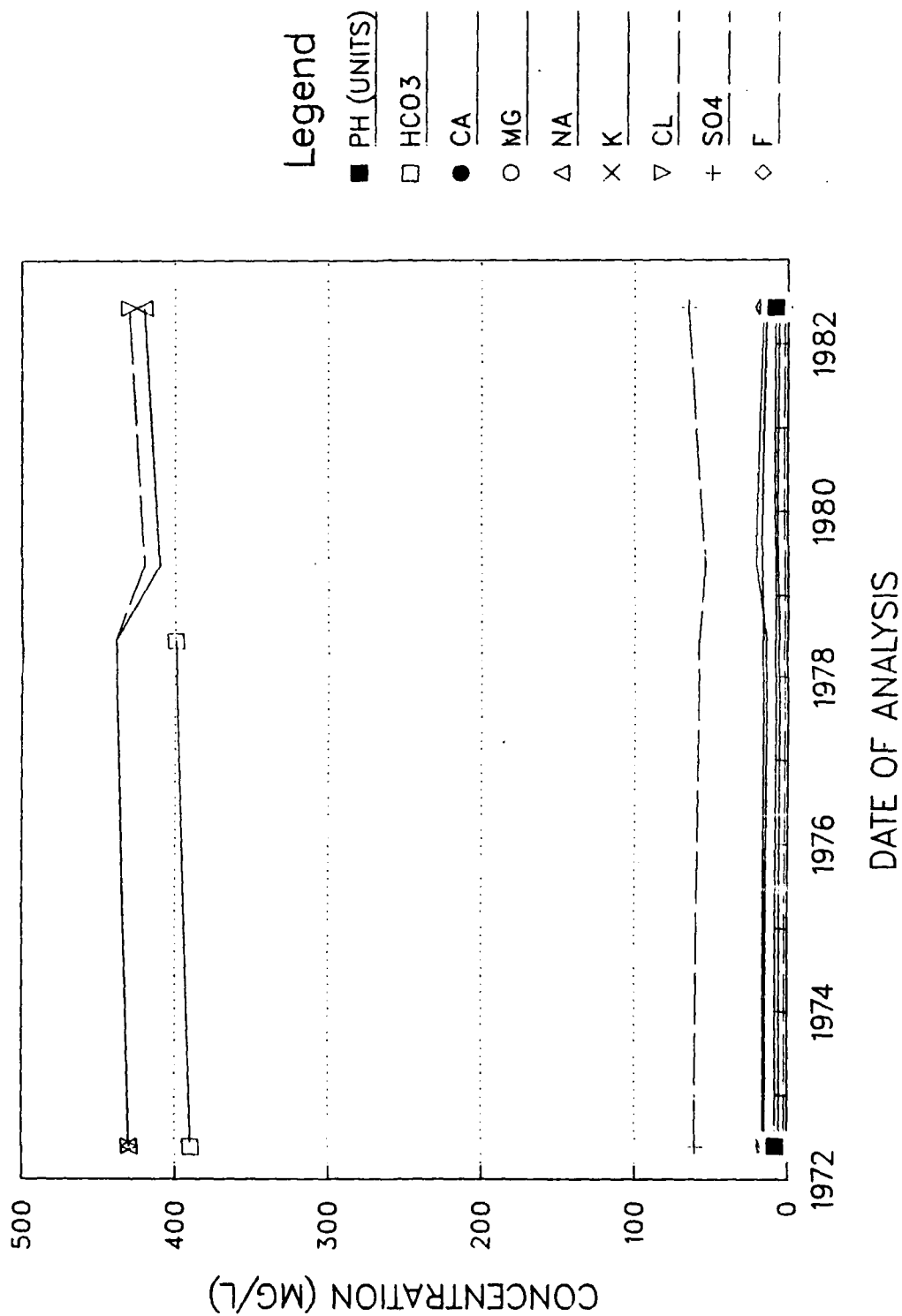
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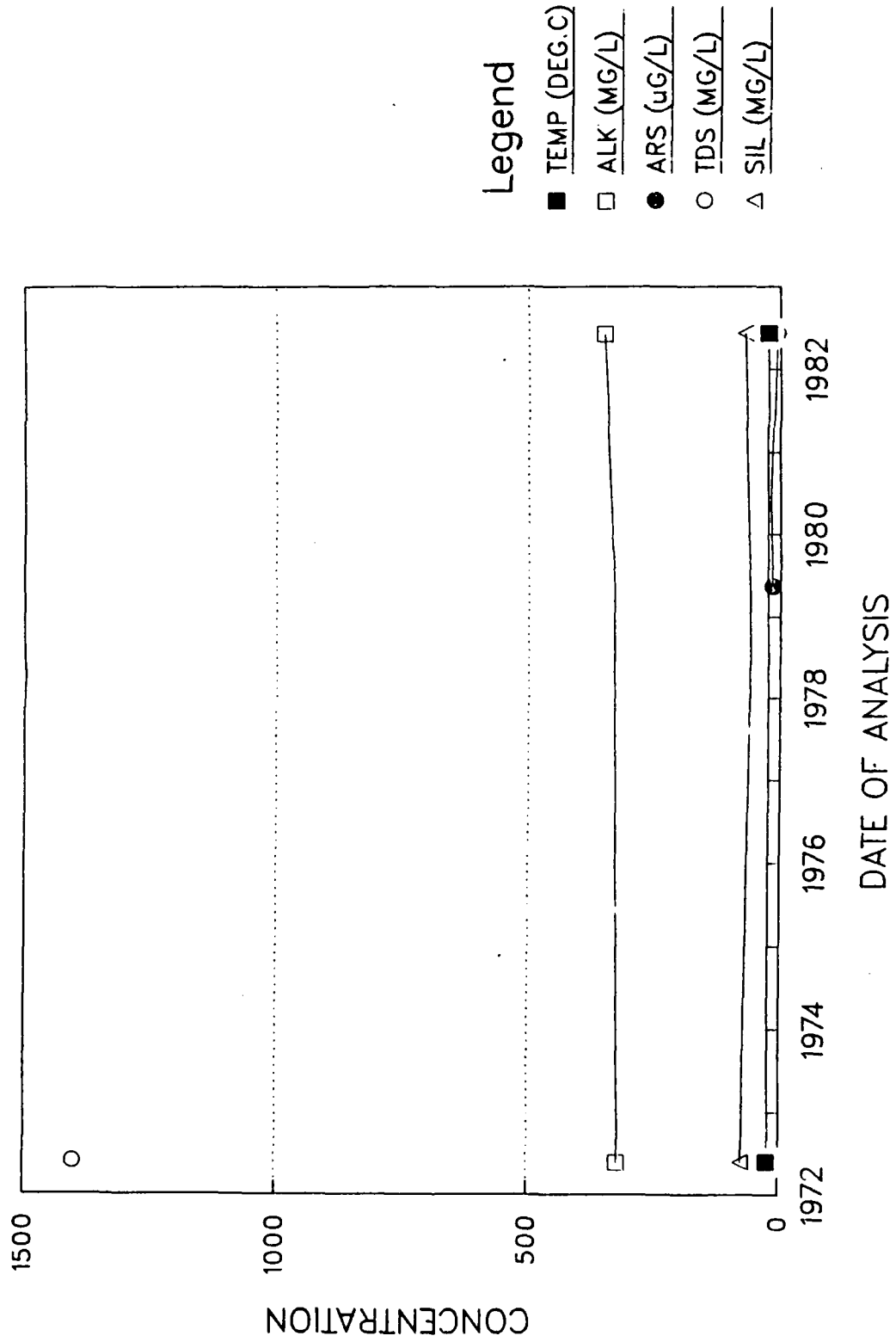
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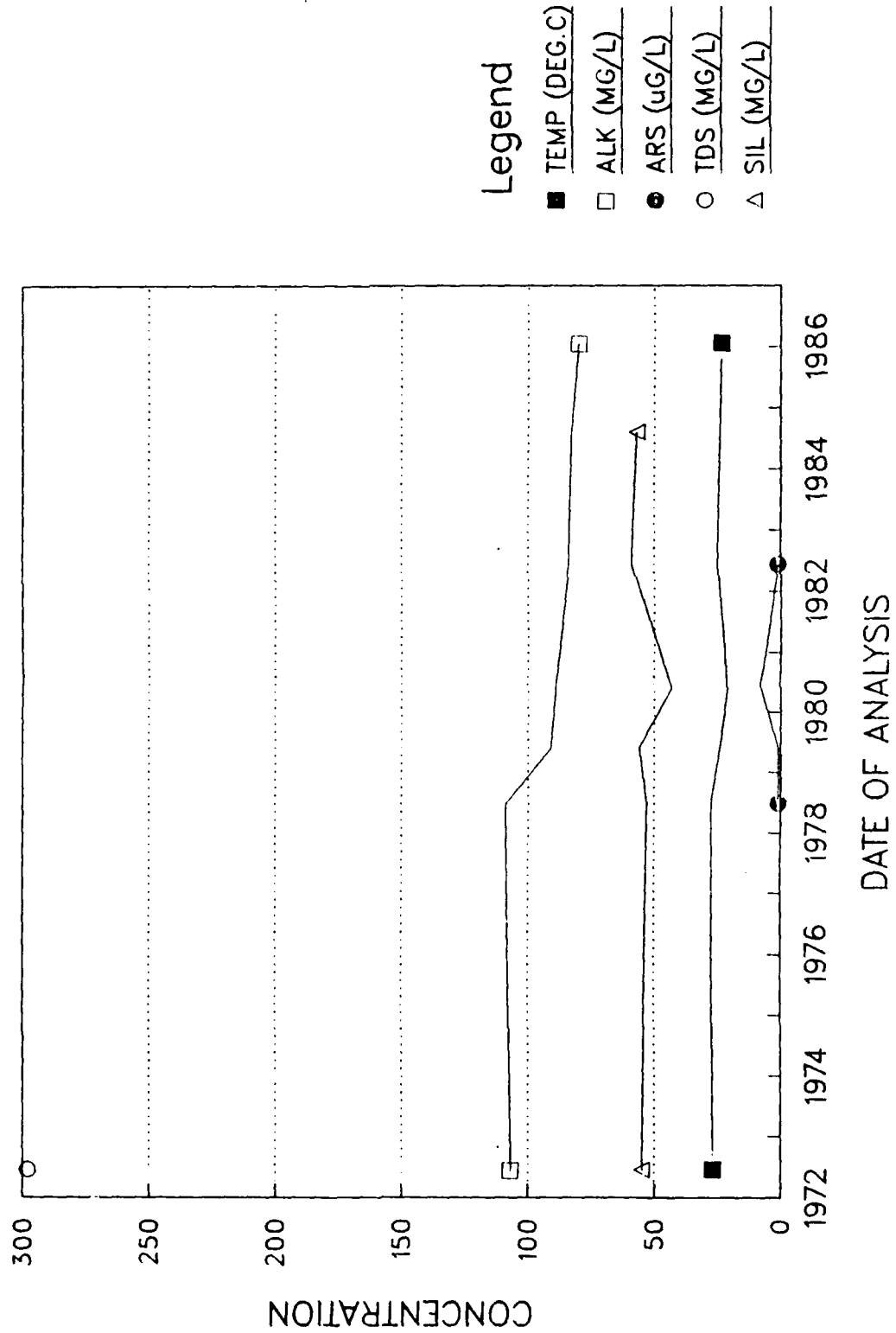
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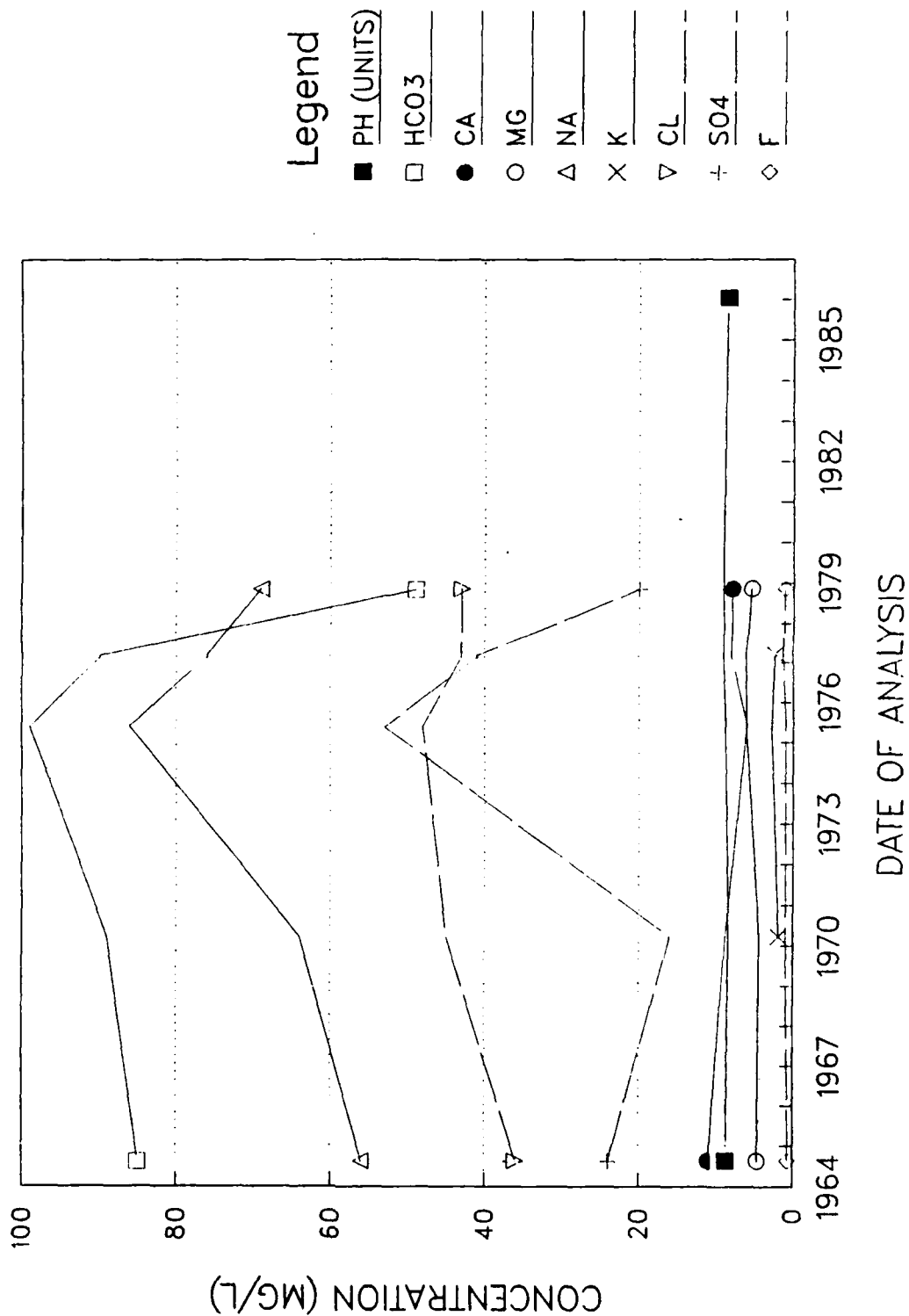
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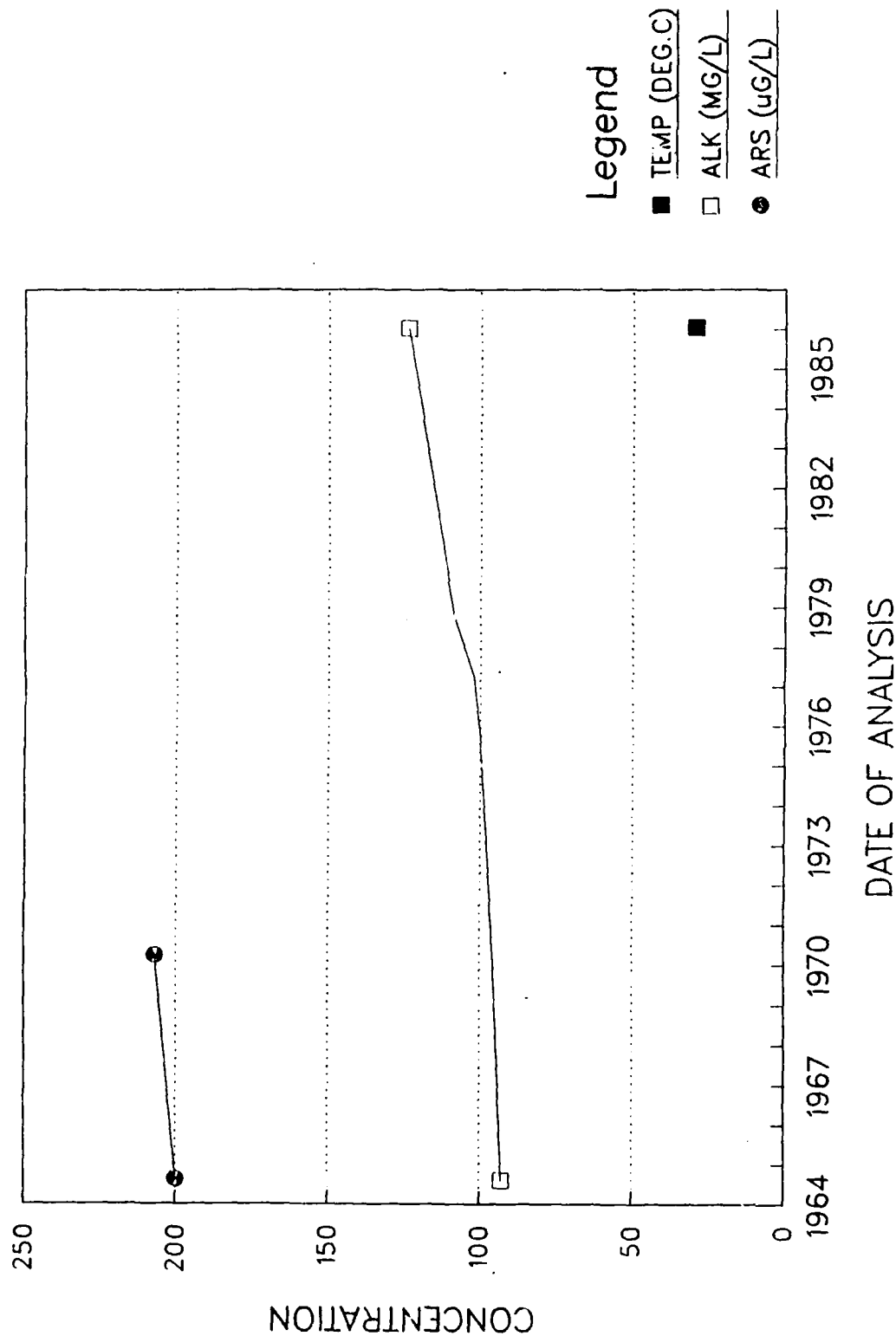
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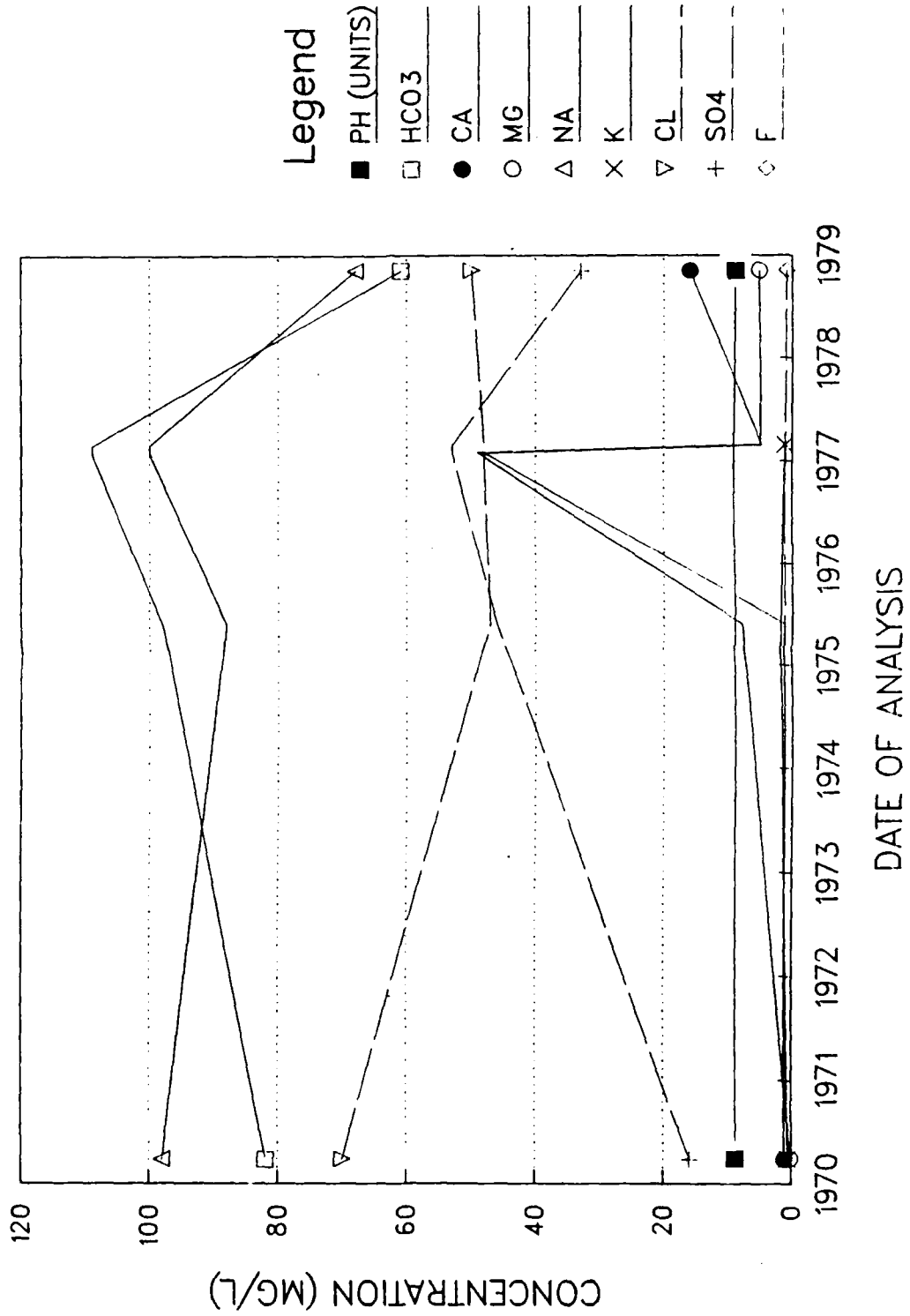
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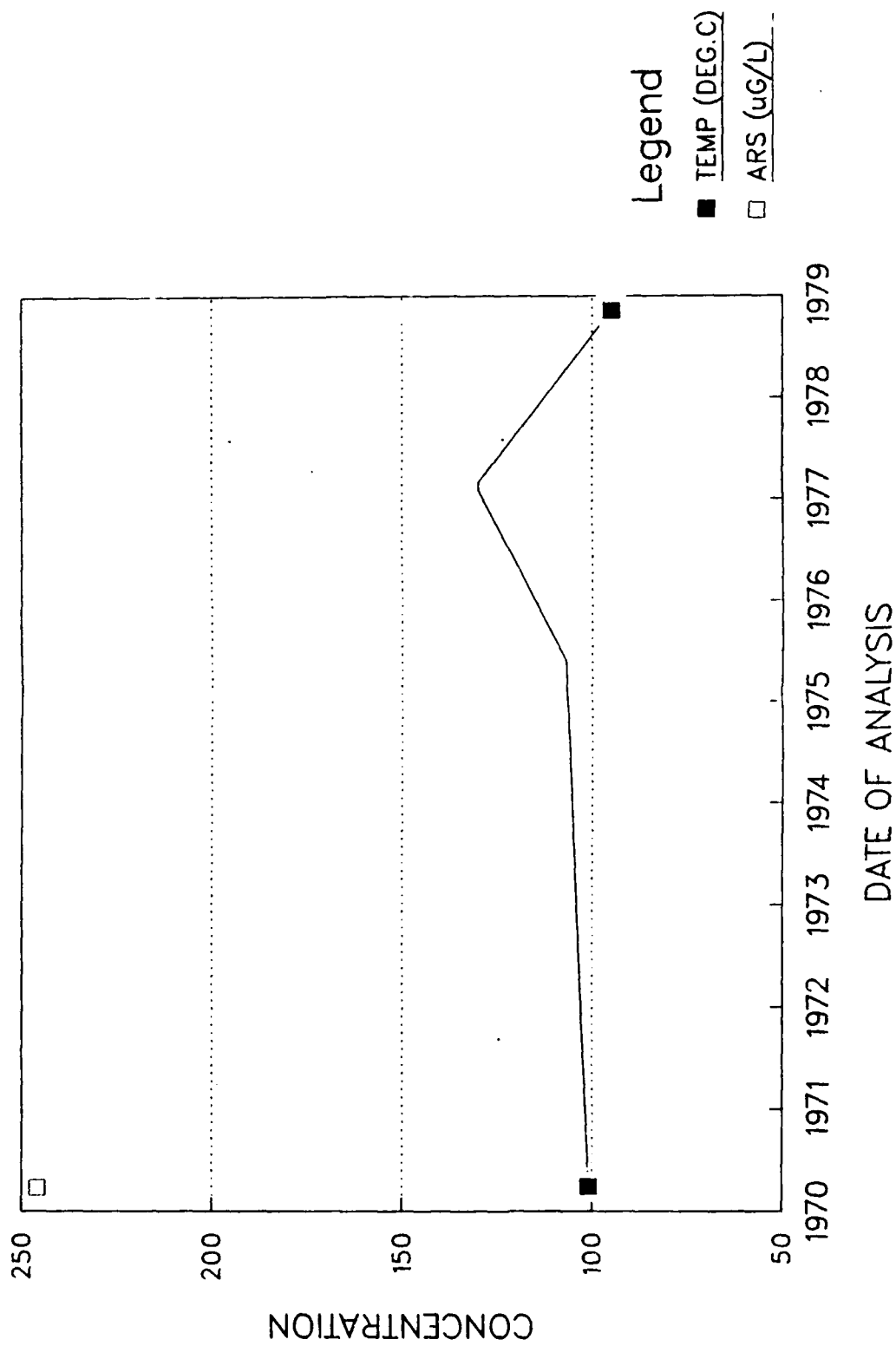
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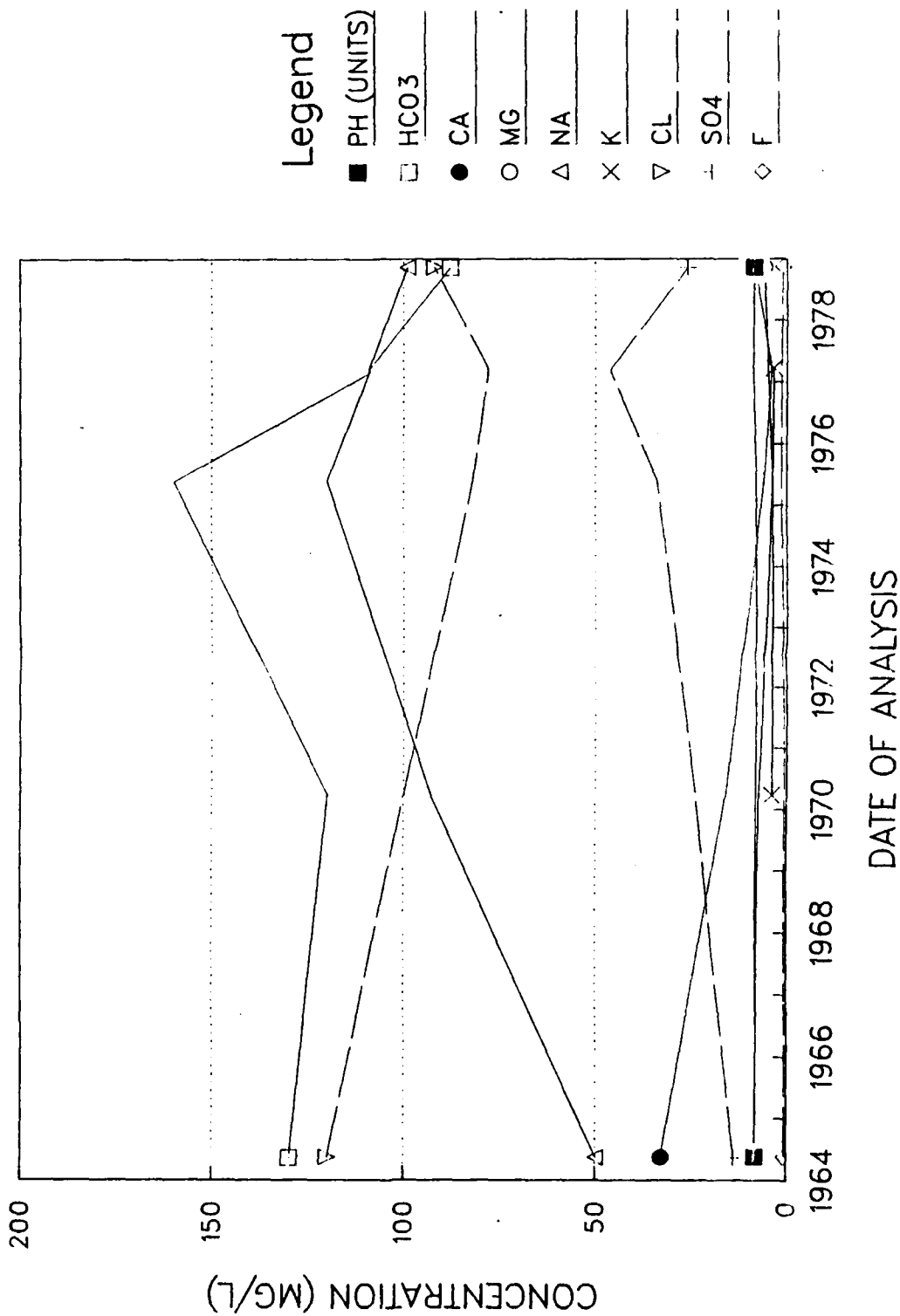
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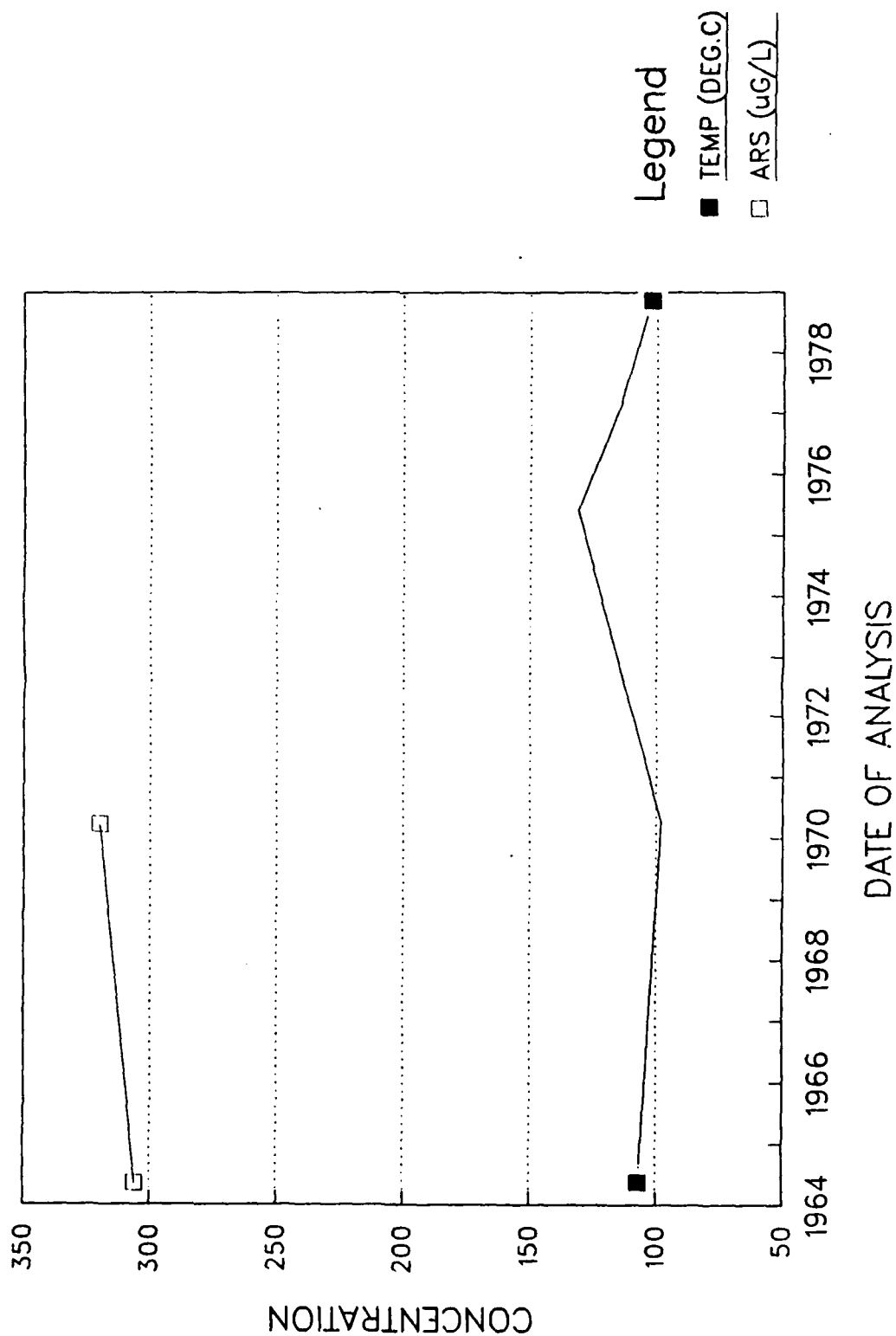
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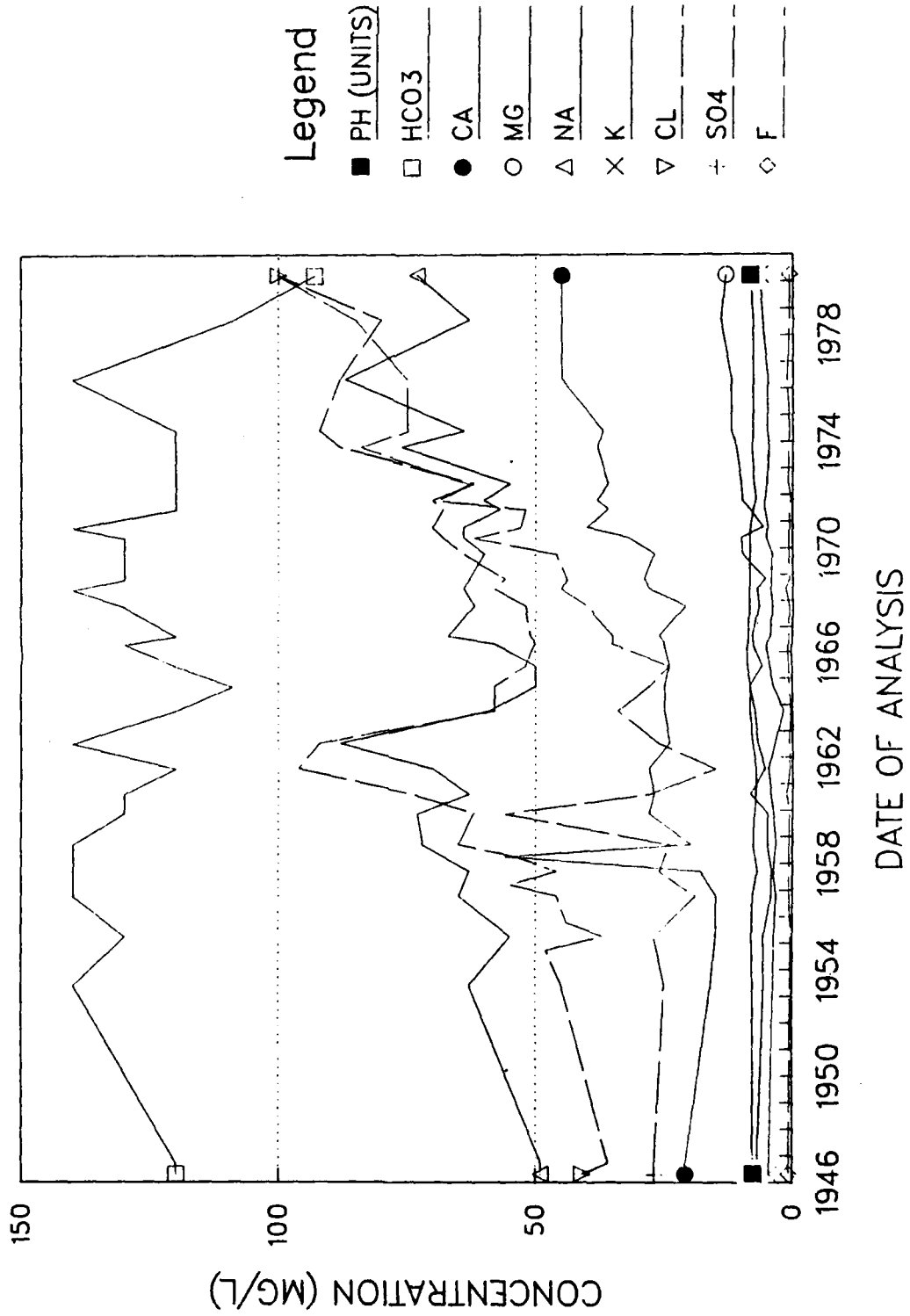


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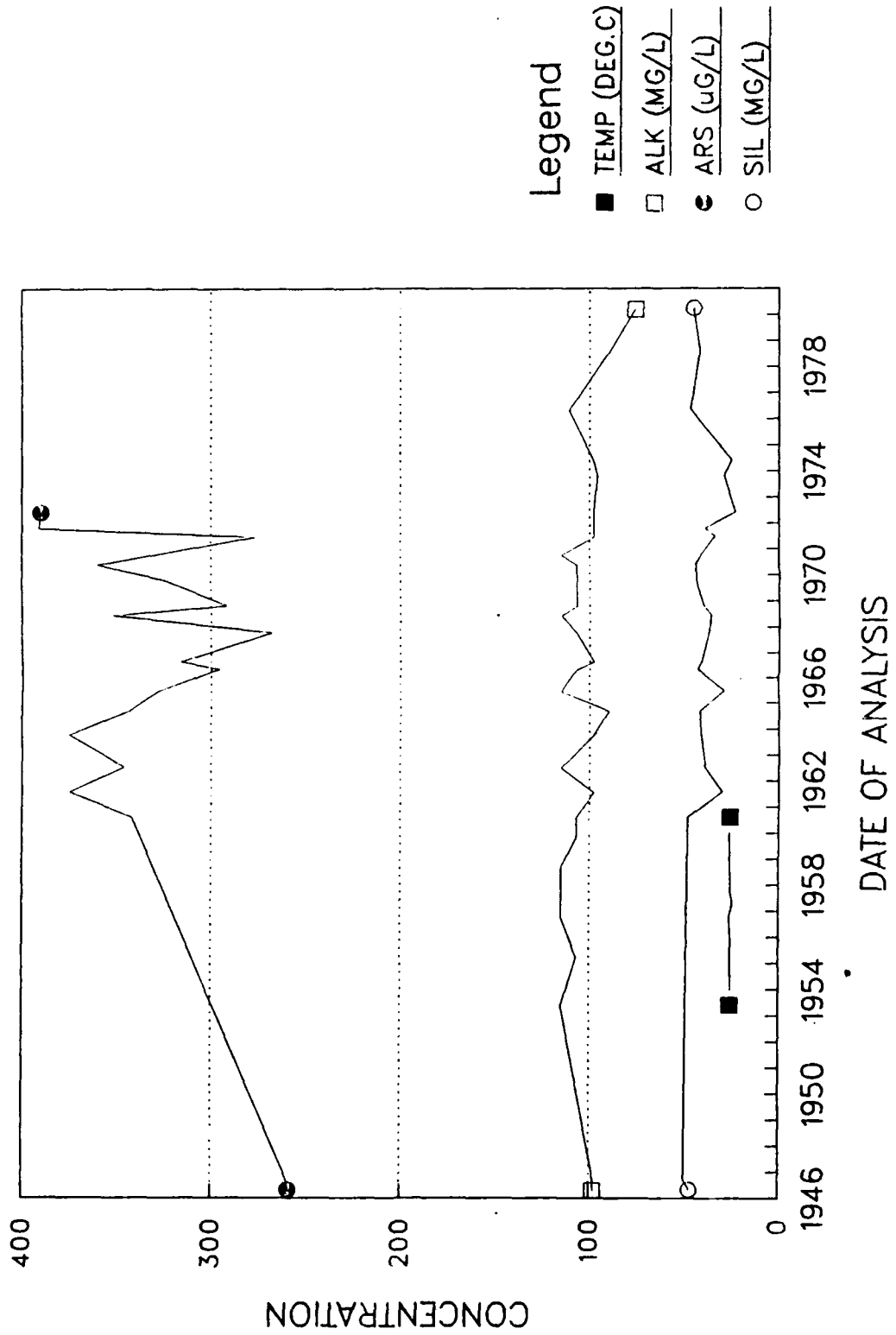


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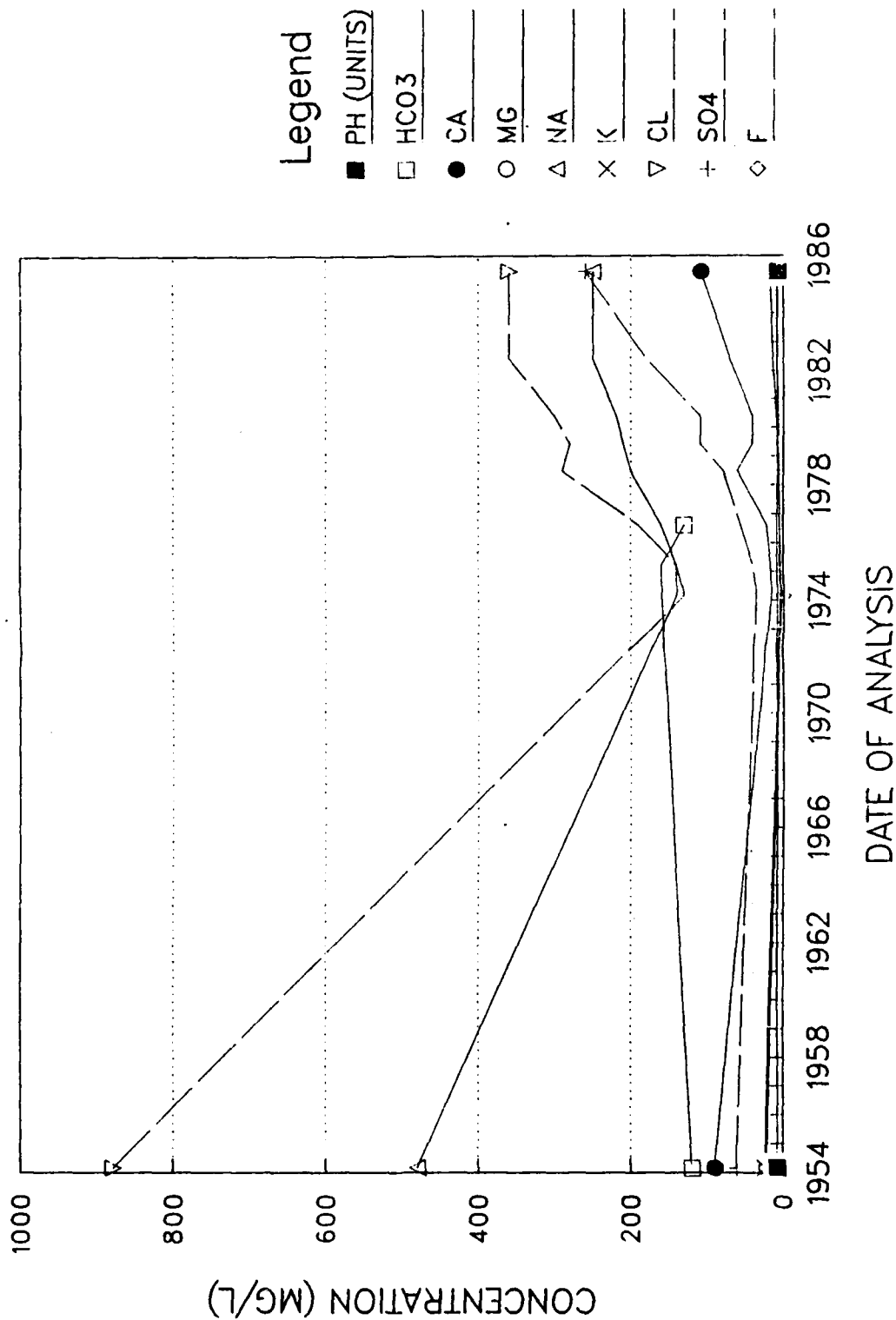
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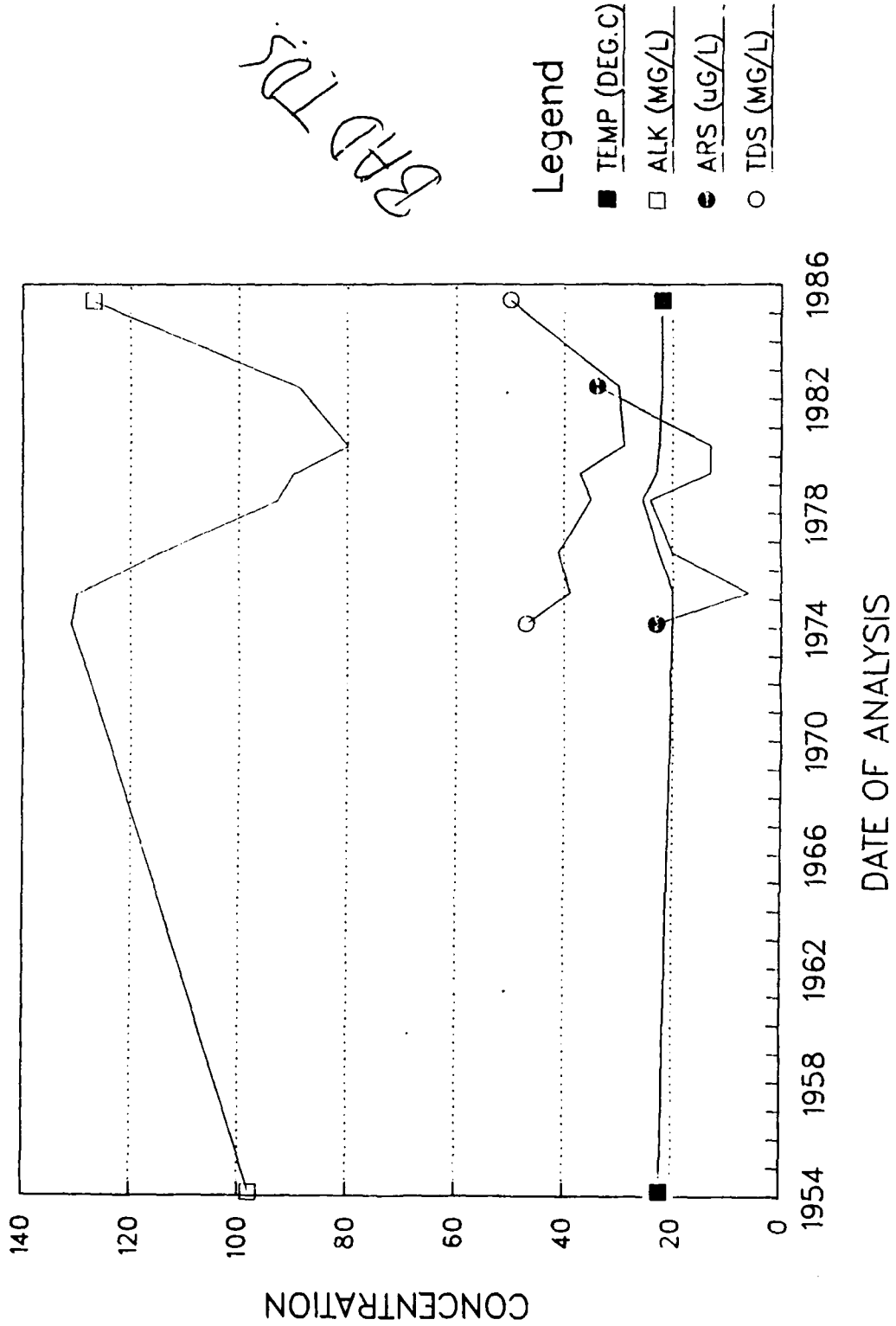


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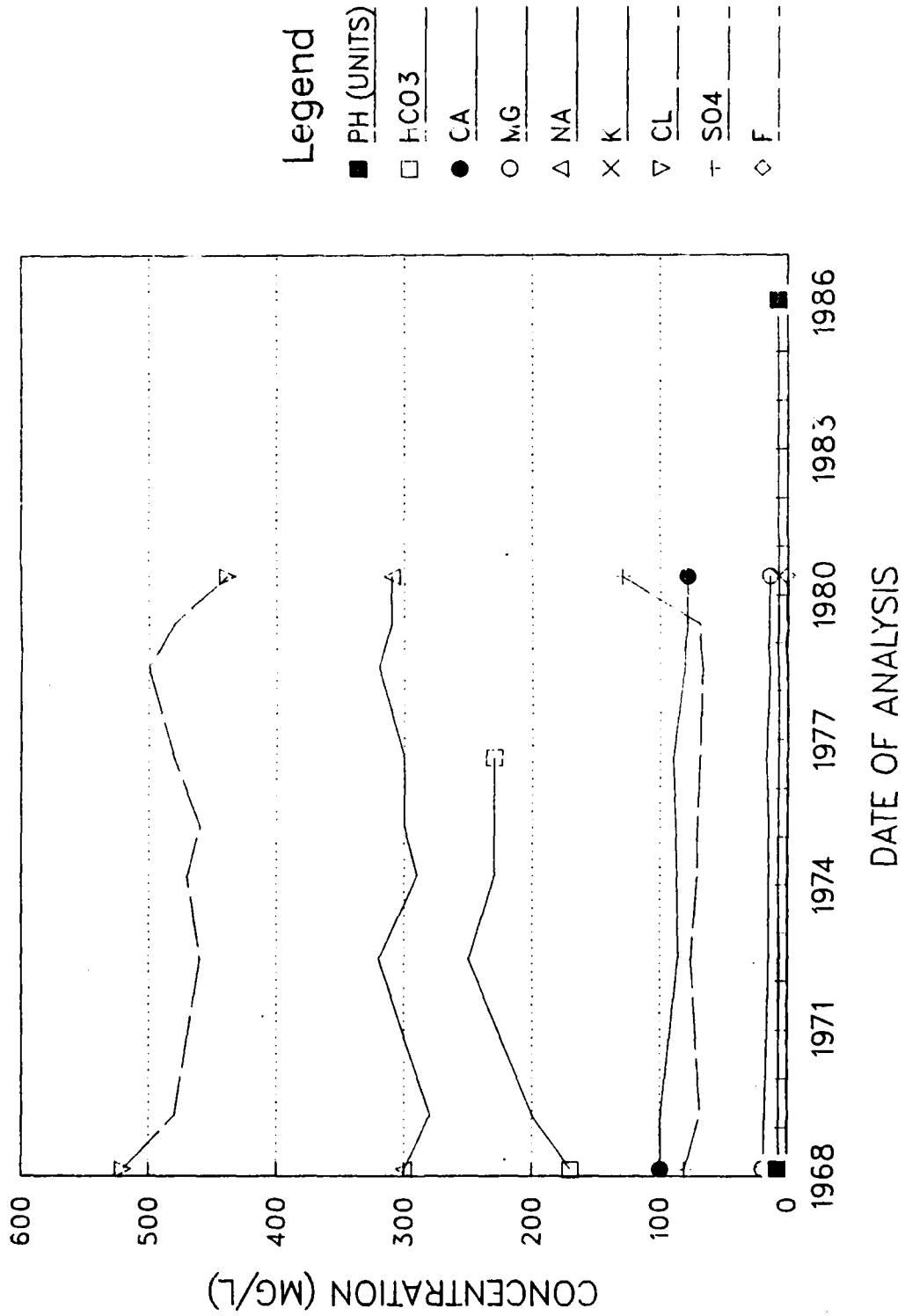


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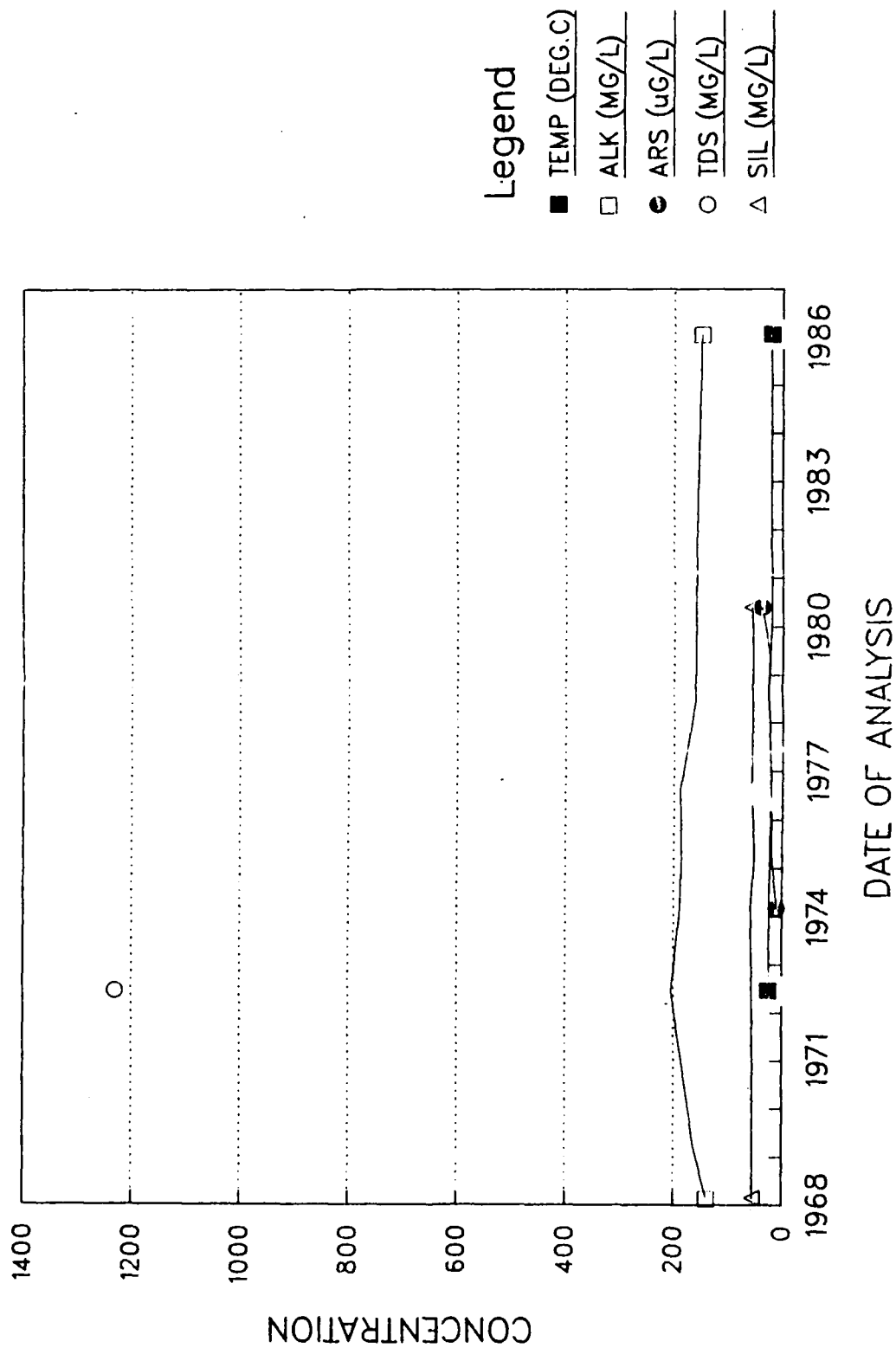
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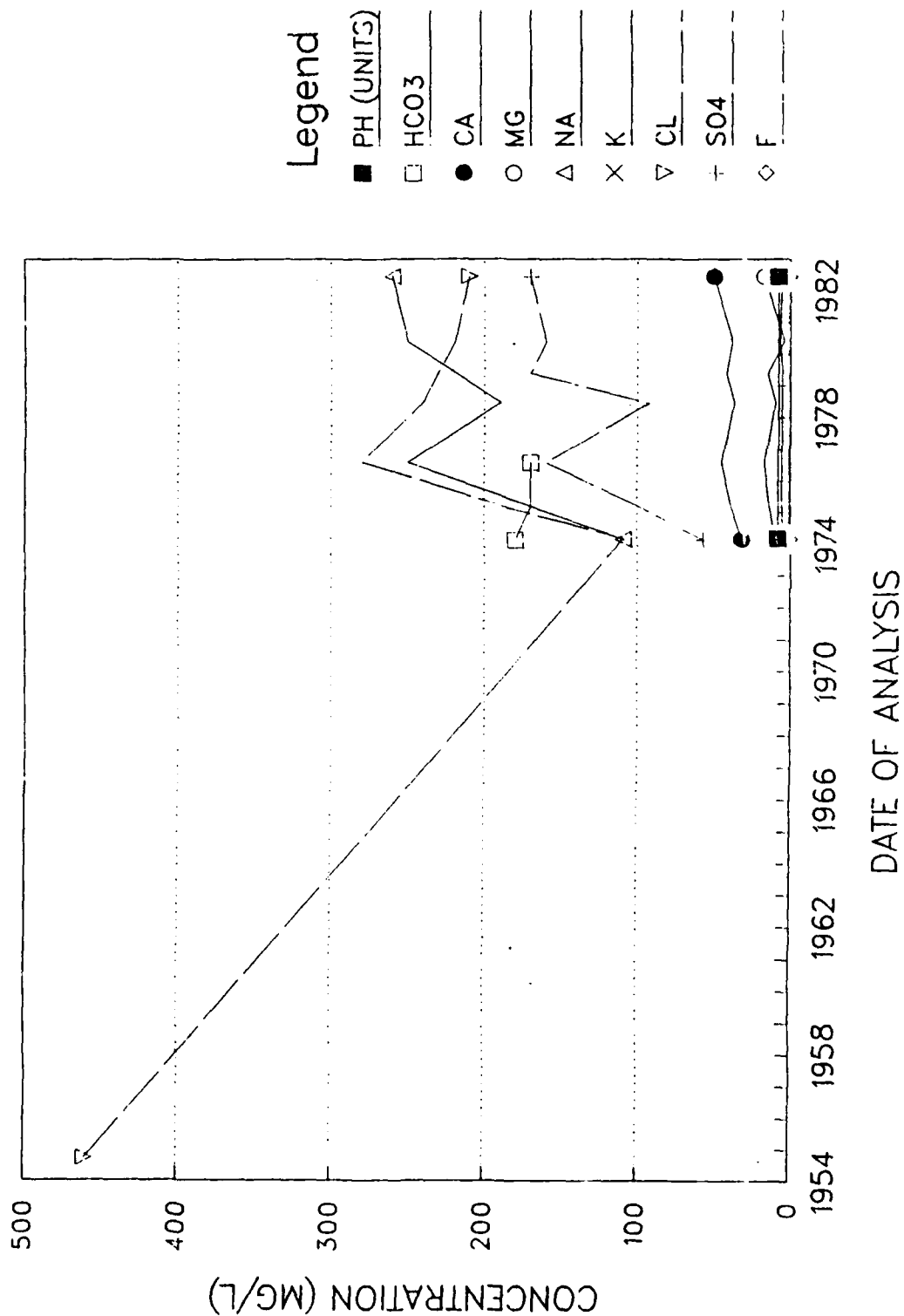
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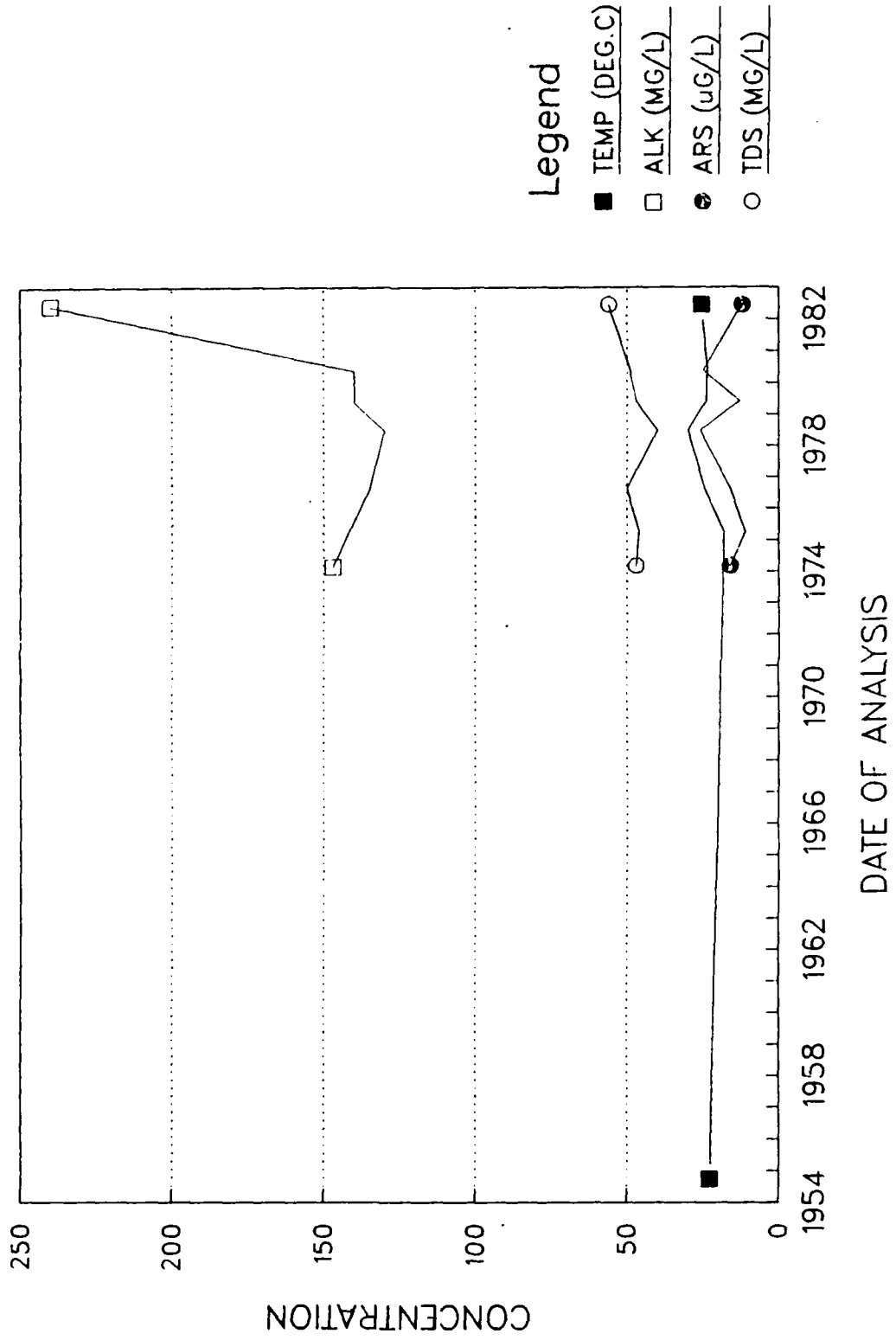
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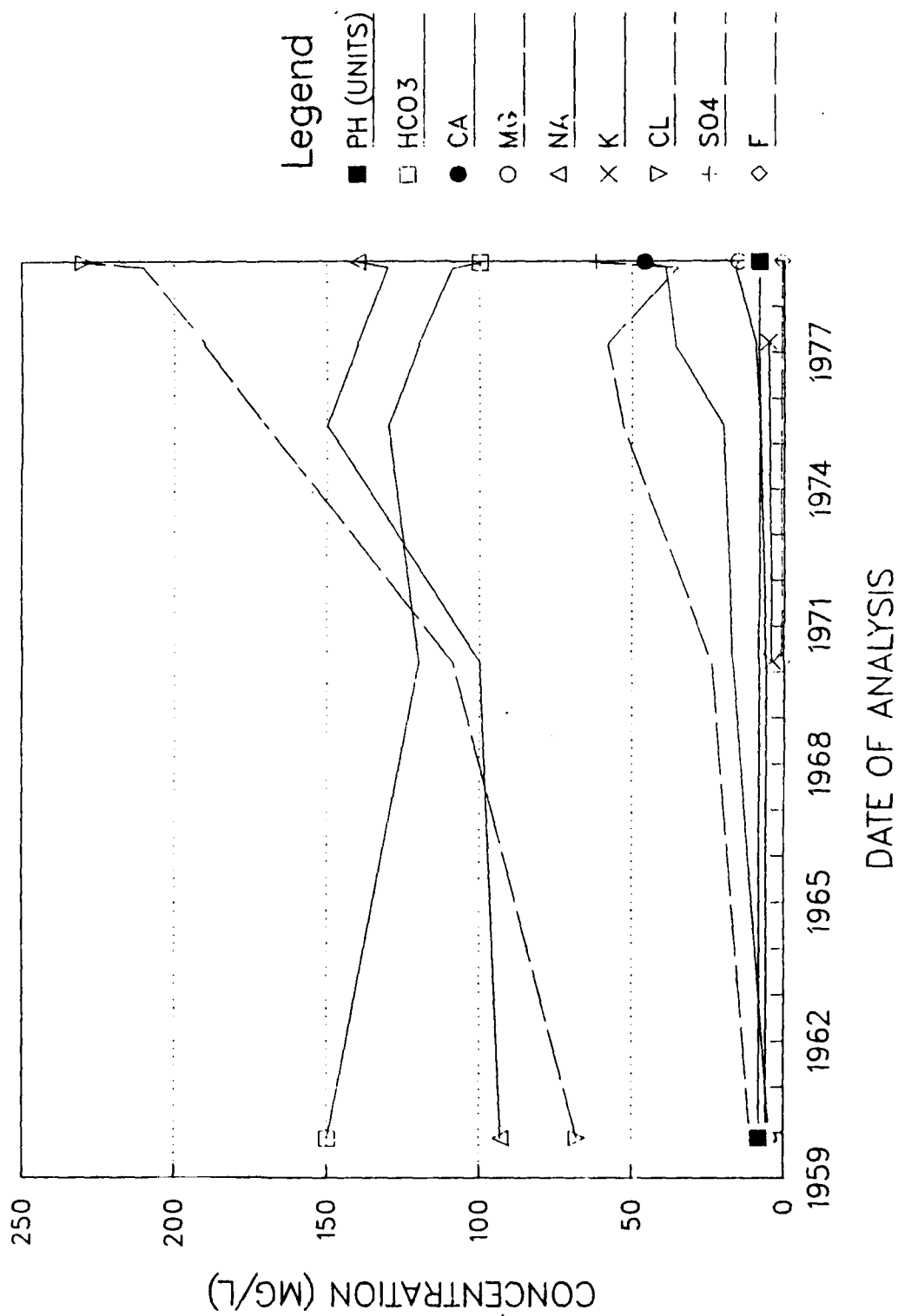
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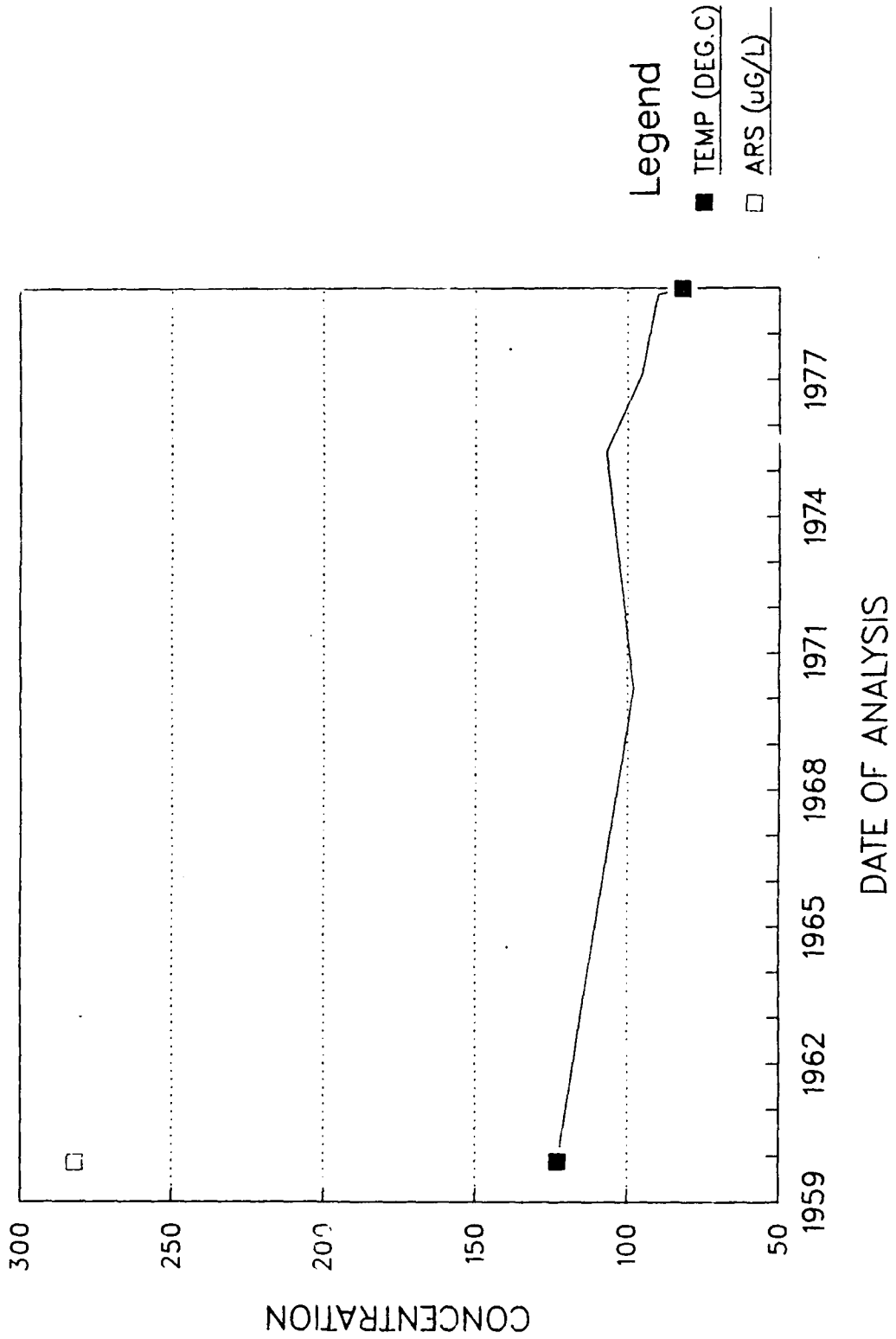
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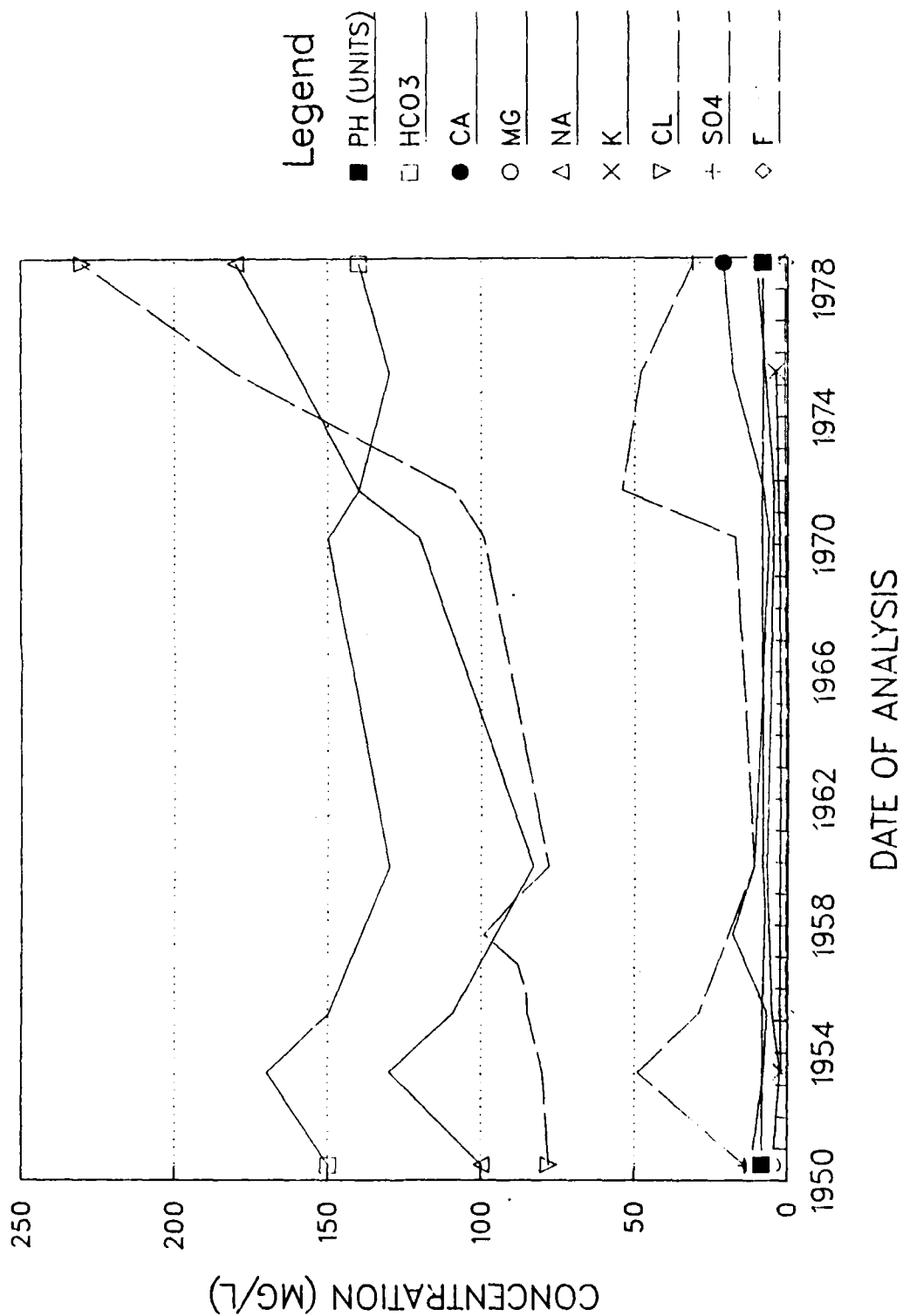
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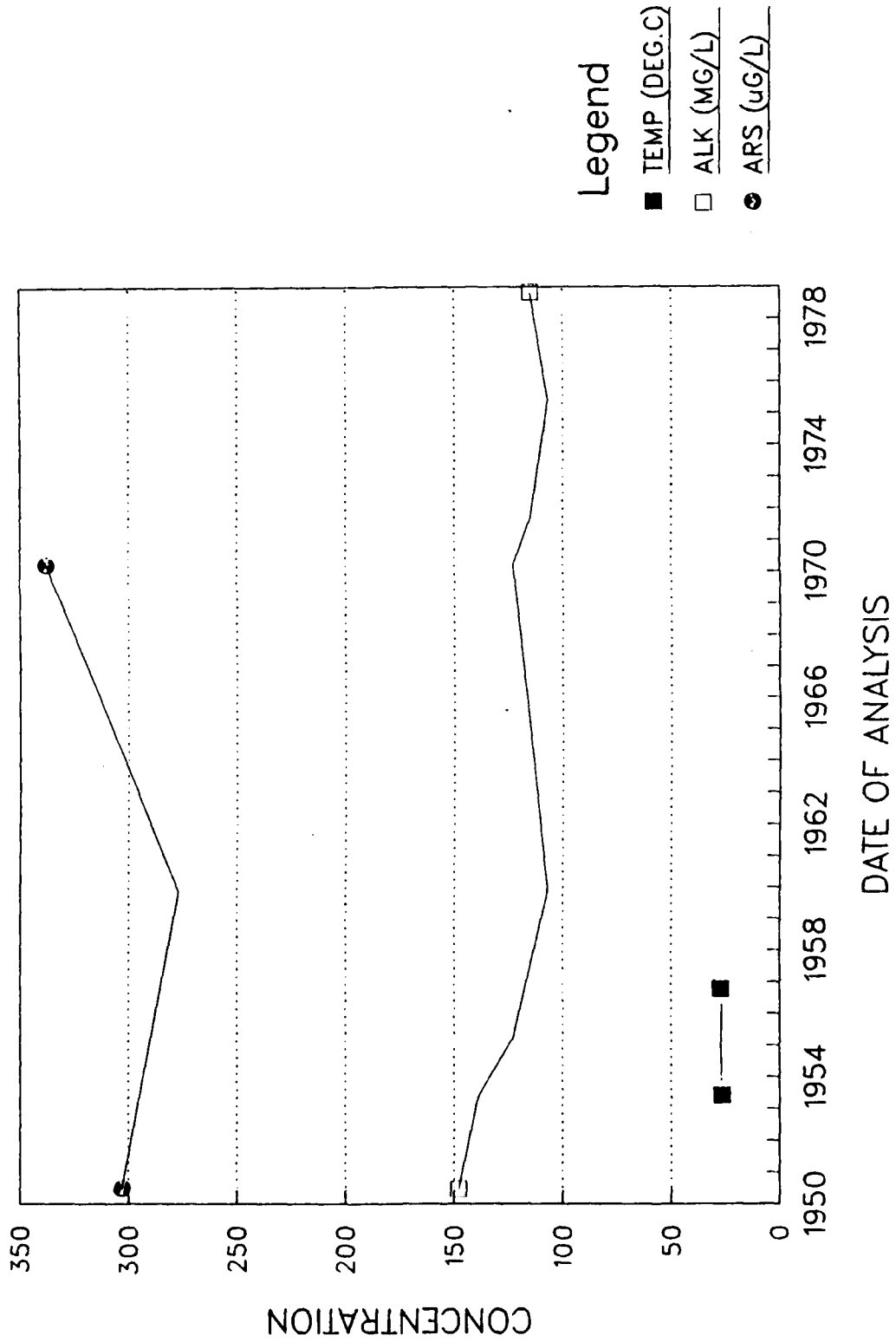
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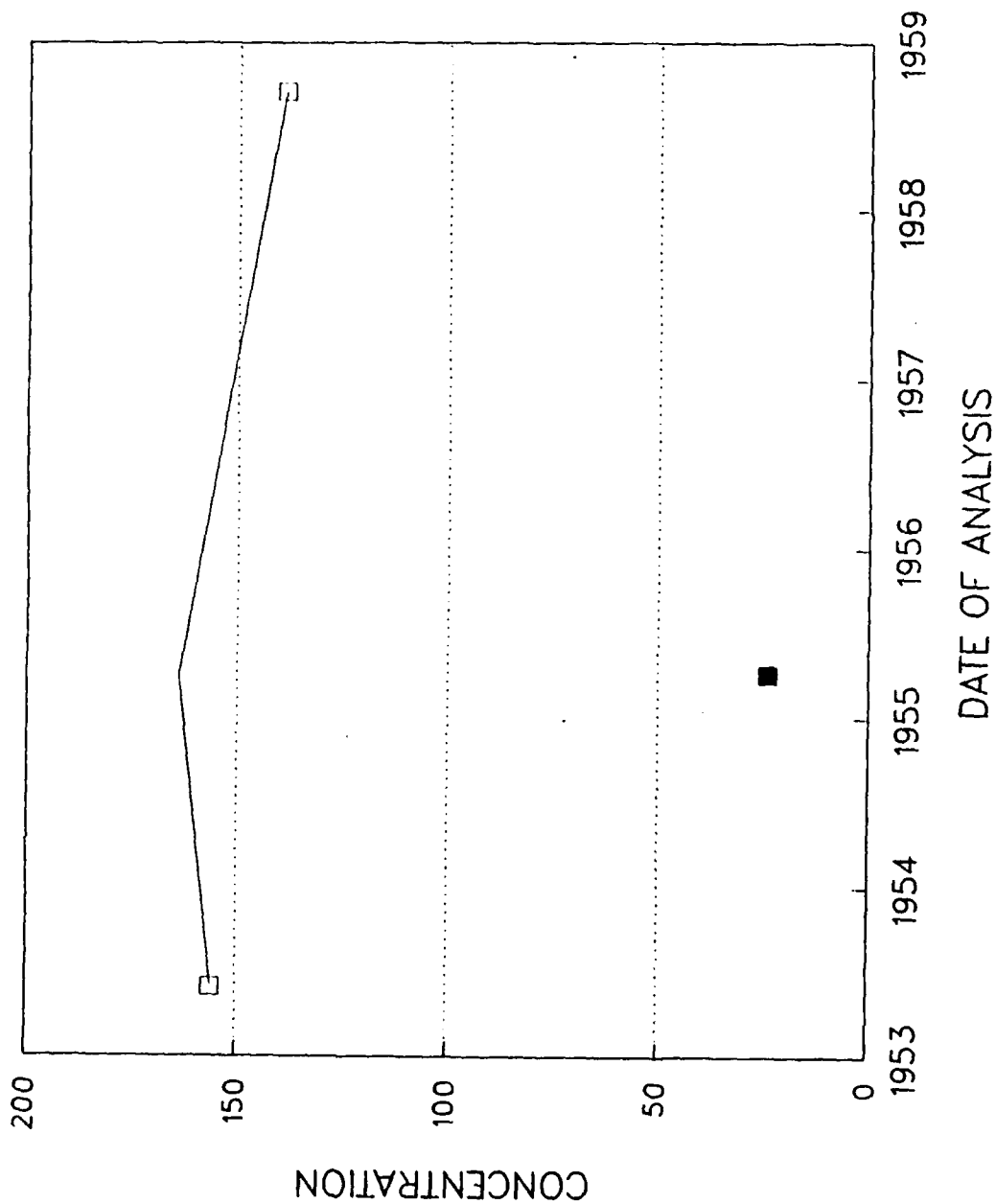
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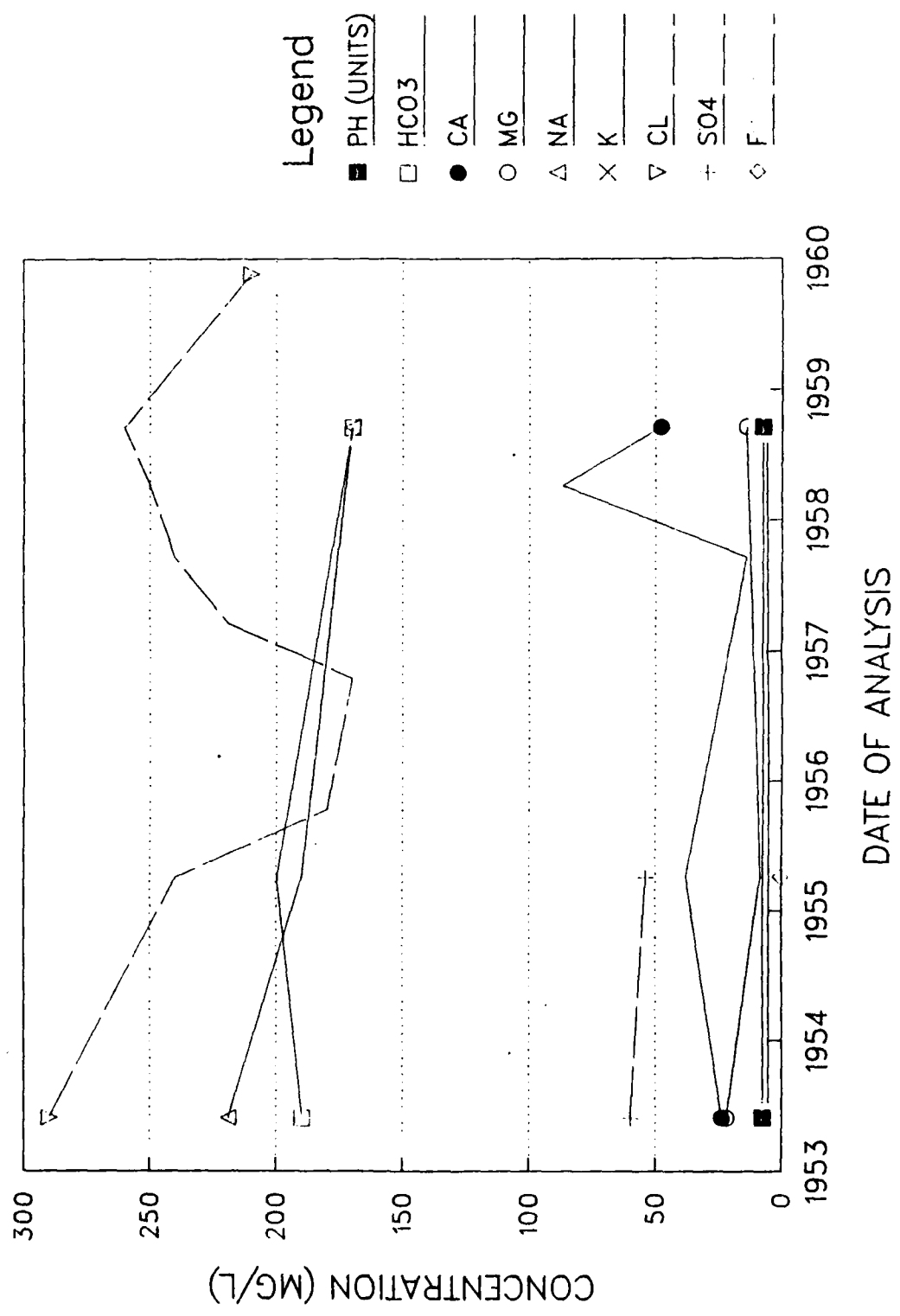
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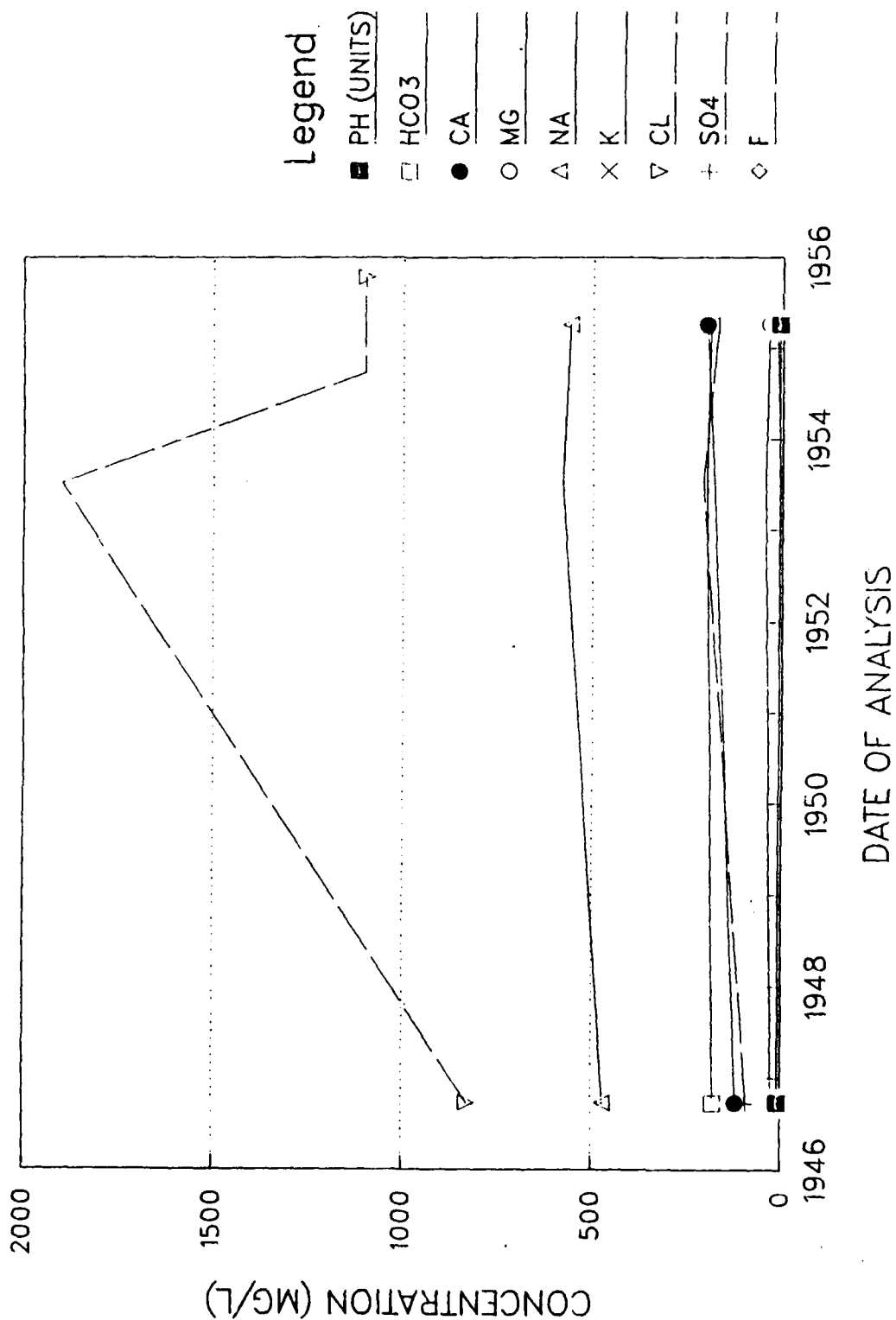
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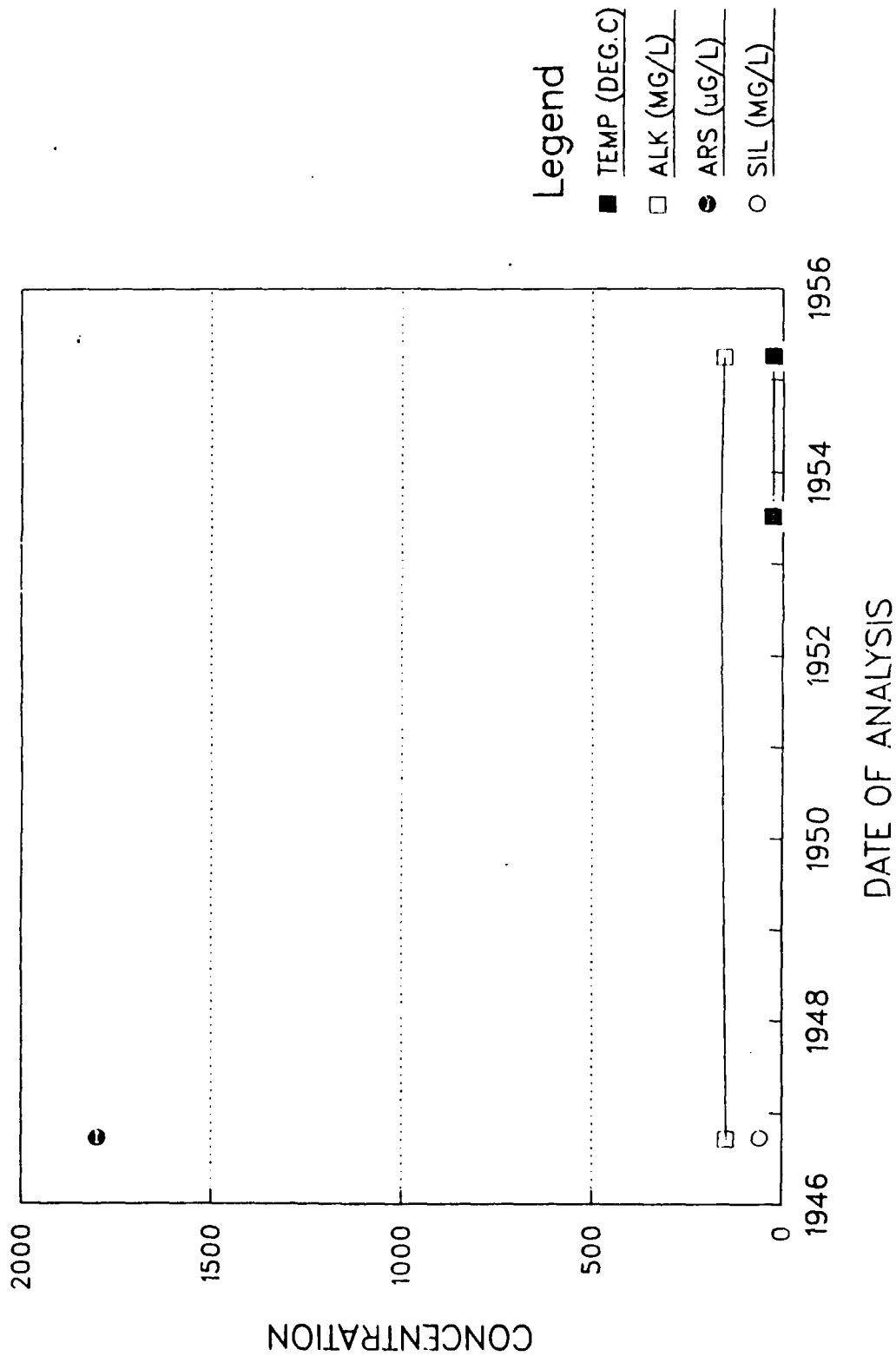
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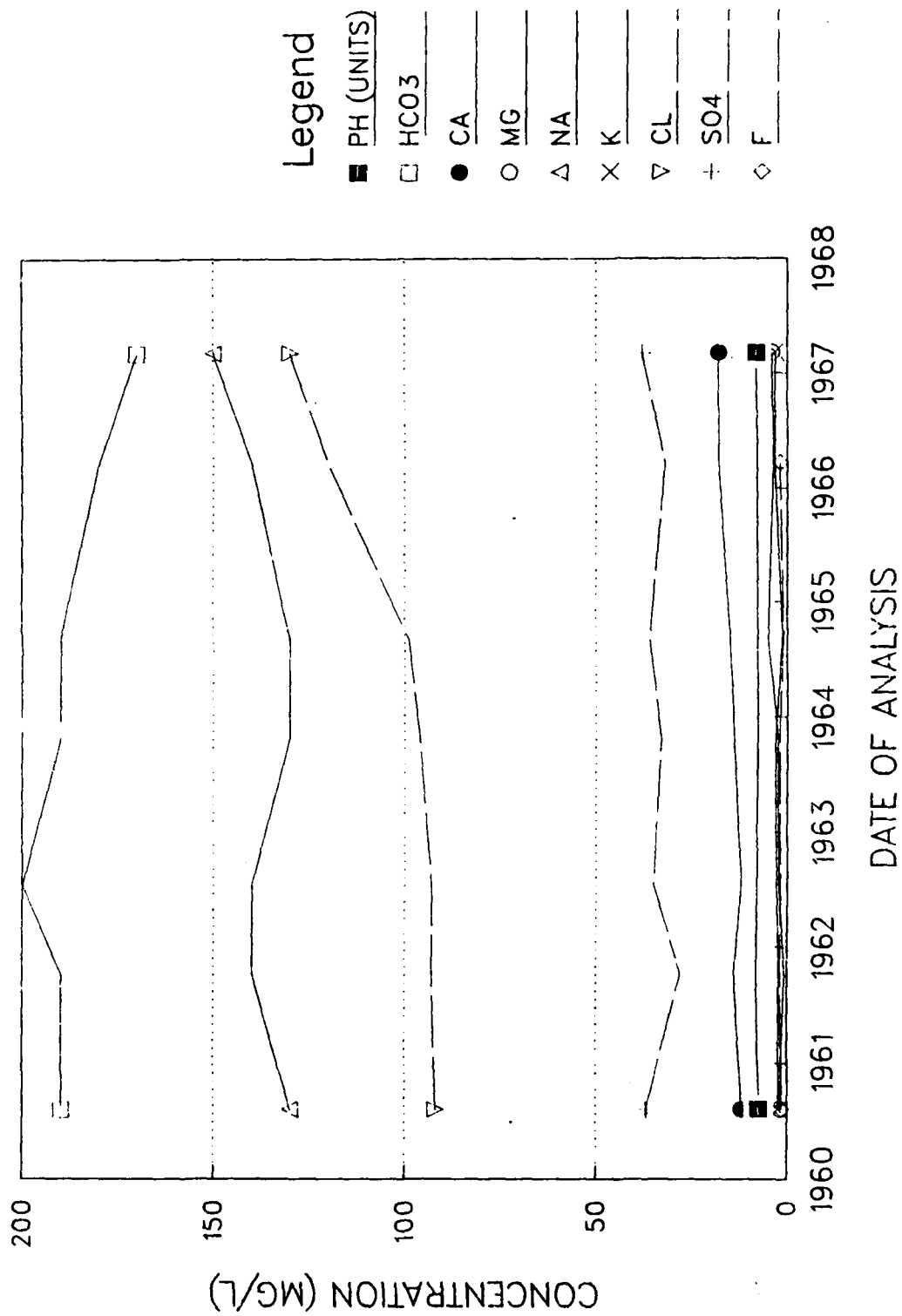
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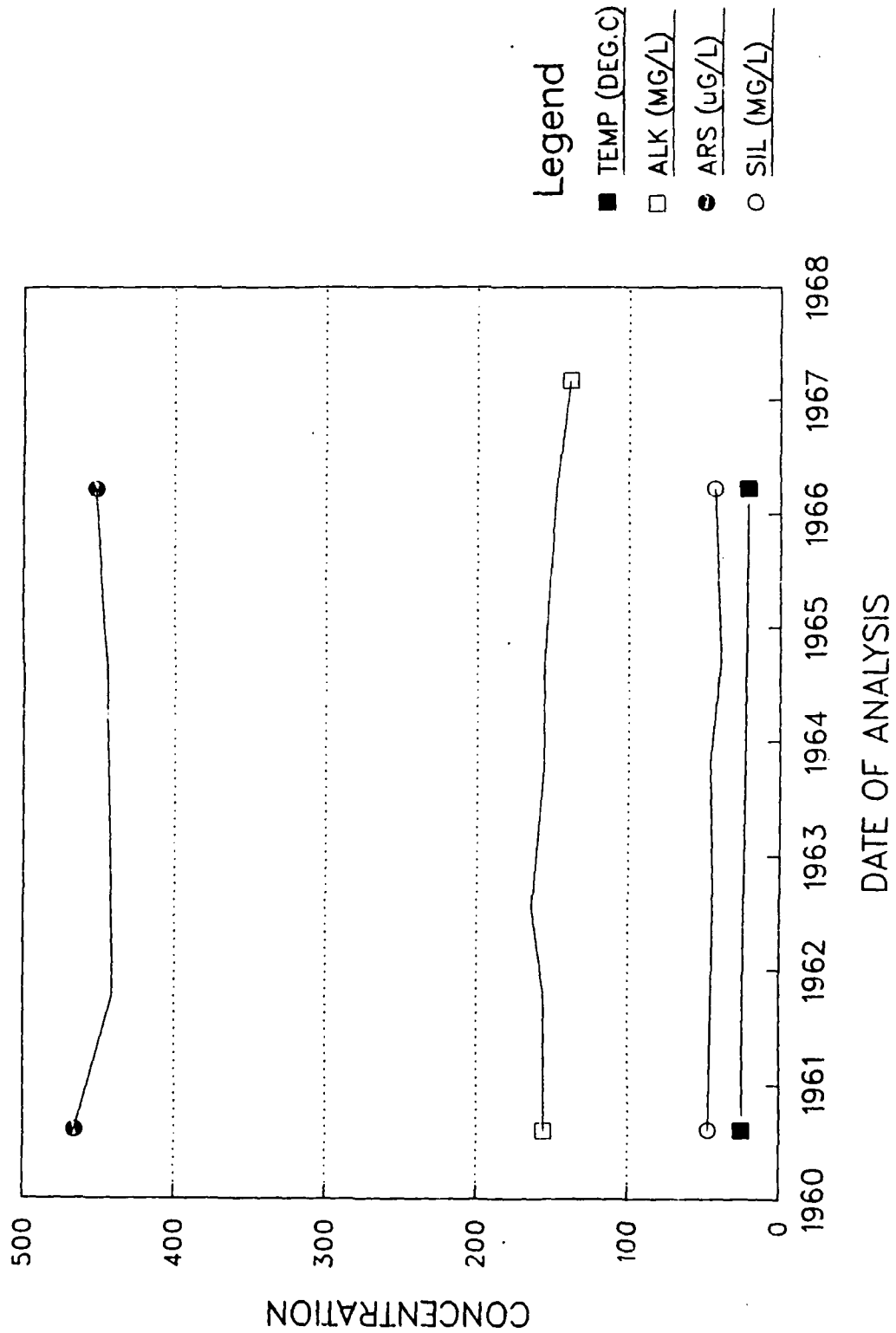
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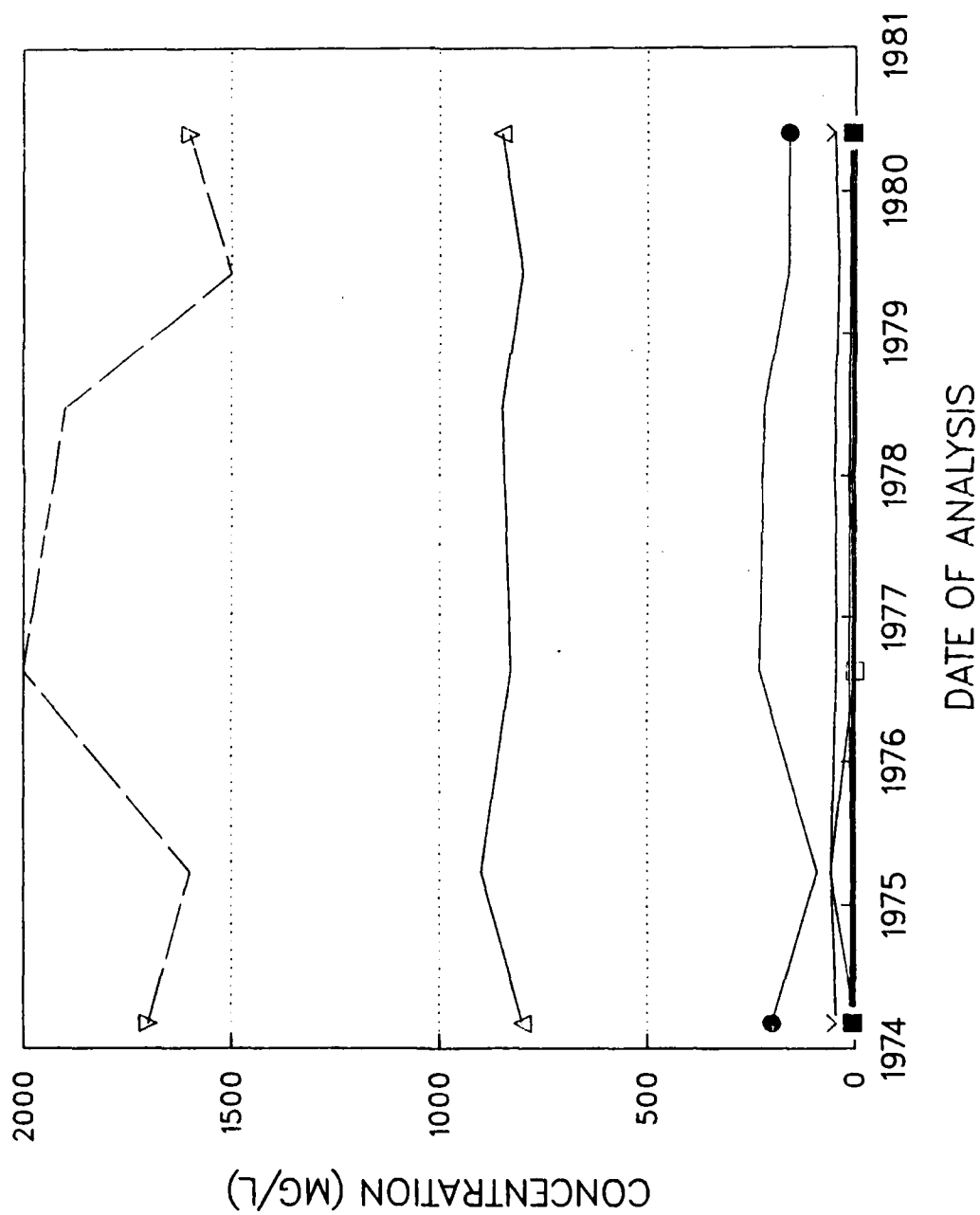
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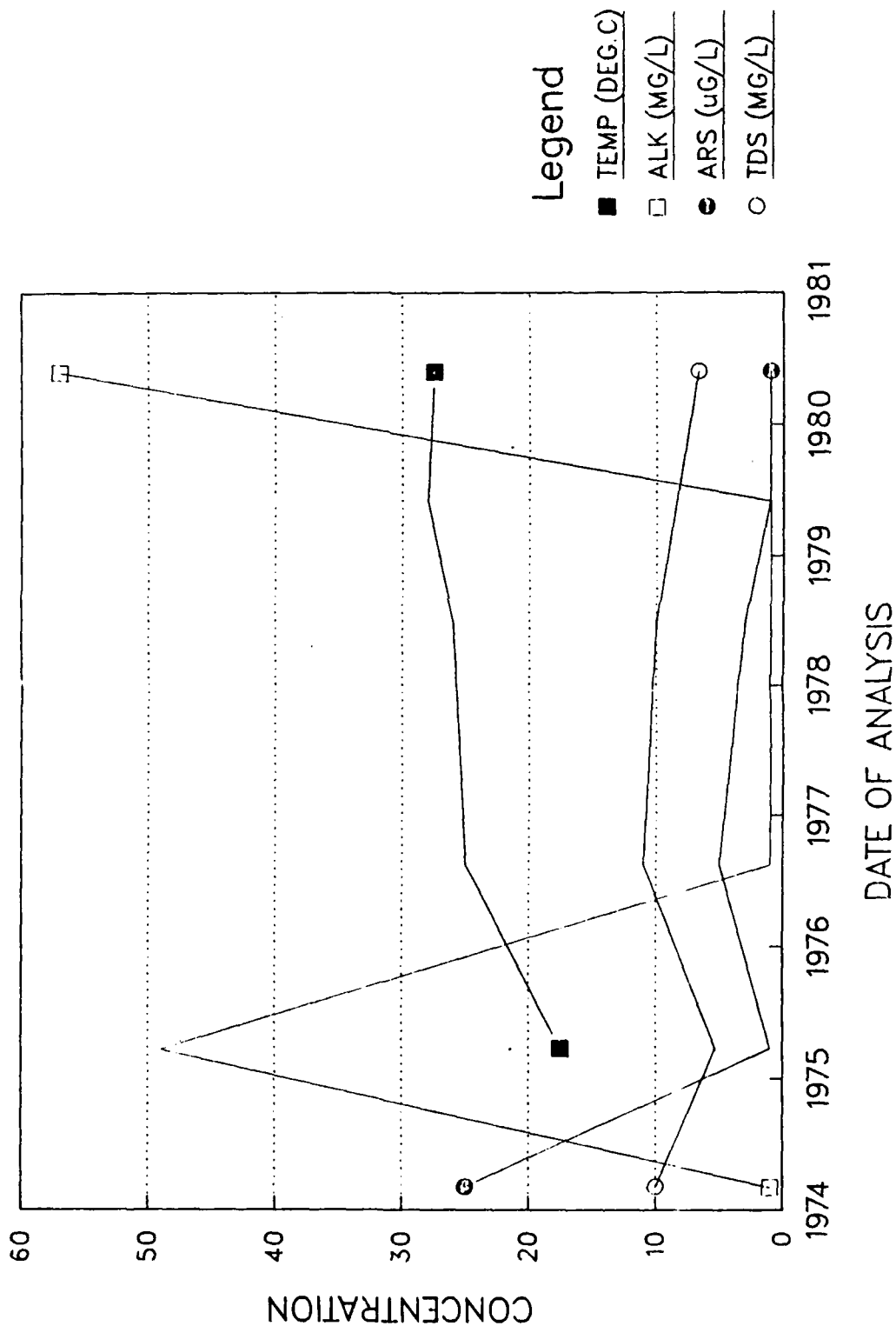
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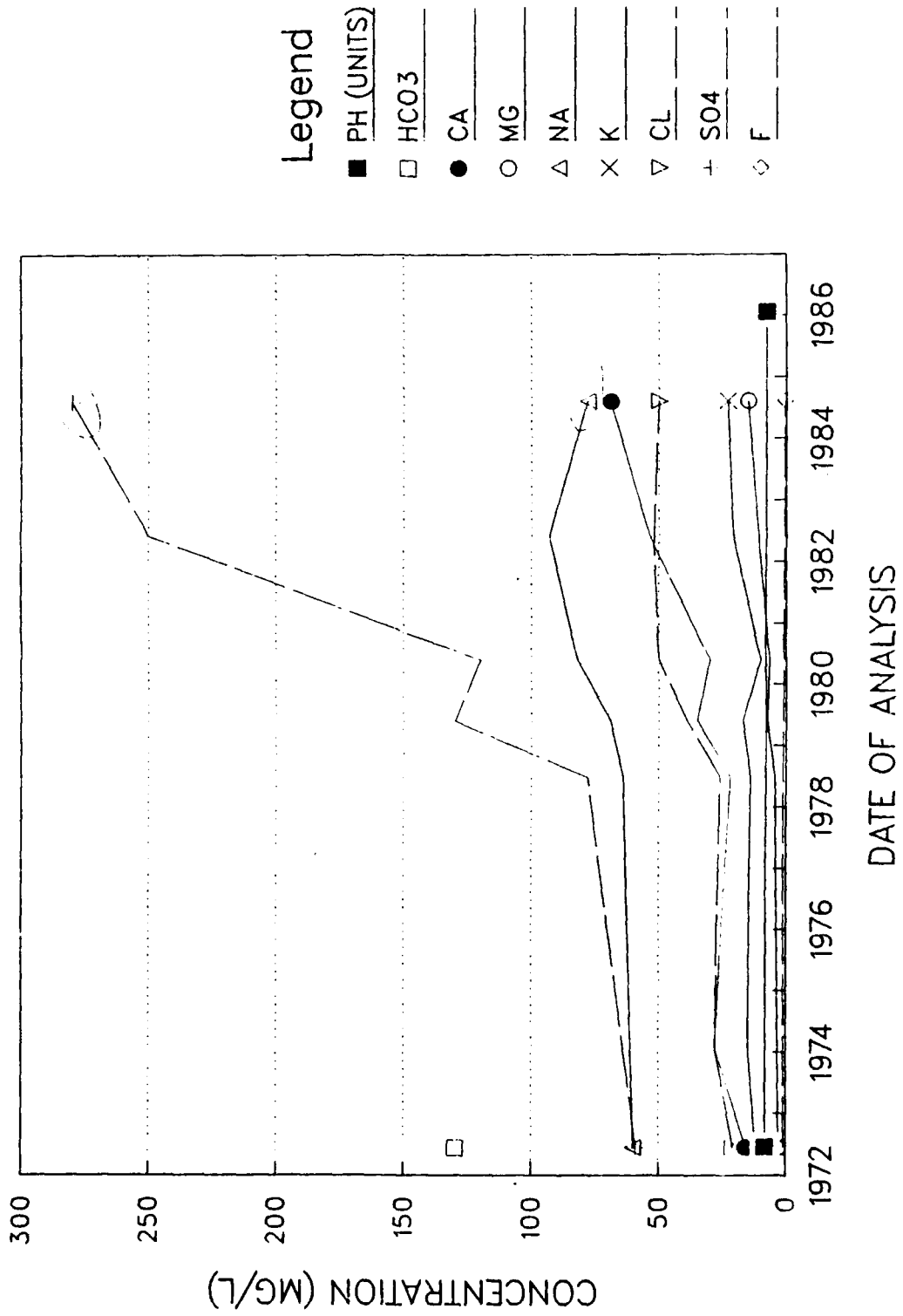
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STATION NUMBER 27/40-10R01



STATION NUMBER 26/40-28J01 3



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